

2. A Revision of the African Silurid Fishes of the Subfamily *Clariinae*. By G. A. BOULENGER, F.R.S., V.P.Z.S.

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(Text-figures 248–257.)

The Silurid Fishes of the Subfamily *Clariinae* are one of the most interesting, but at the same time most difficult groups of the African fresh waters. Many of the species of *Clarias* are so closely related, so difficult to define, and show so much individual variation in characters which have been regarded as specific, that I have felt compelled to take up their study as if they had never been classified before. I hope the revision which I now offer will place the determination of the species on a sounder footing.

The group is of special interest from an evolutionary point of view, the series *Clarias*—*Allabenchelys*—*Clariallabes*—*Gymnallabes*—*Channallabes* forming what may be termed an orthogenetic series* leading from a more typical Cat-fish to one that is truly Eel-like, with almost every link in the chain connecting the two extremes. A few of these types are represented on the subjoined text-figures.

The eel-shape has been reached, in this series, by an elongation of the caudal part of the body concurrently with the fusion of the dorsal and anal fins with the caudal, and the reduction and final suppression of the paired fins, the ventrals first, followed by the pectorals. At the same time the bony buckler which so efficiently protects the head of the typical *Clarias* has been gradually reduced until its complete suppression in the most elongate forms, *Gymnallabes* and *Channallabes*.

I do not believe for one moment that the more generalised forms here described represent the actual ancestors of the terminal type, as it is not likely that they should coexist at the present day; but I regard the apparent links of the chain as side branches of a continuous stem, as the close allies of these extinct forms, and for the purpose of the study of the lines of derivation they are just as good examples as if they were the actual ancestors, because they must be so very similar to them. Even in palæontological series, what we usually regard as continuous series are surely mostly made up of such elements; except in the case of varieties we have no evidence of any one form having turned into another, evolution being after all still a hypothesis,—the only workable hypothesis, built up on concurring and converging probabilities.

It is sometimes the case that an orthogenetic series is susceptible of being interpreted in a reversed direction. But this

* The term 'Orthogenesis' has been invented by Haacke in 1893, and has gained wide circulation through the writings of Eimer. It is intended to express determinate evolution, as opposed to the Darwinian idea of random variation leading to the formation of new types. In orthogenetic series the evolution of the organism is pushed on in one direction without adaptation having to intervene, although the ultimate result is an adaptation.

surely cannot happen in this instance, and the *Clariinæ* therefore teach us that a head protected by a bony buckler may gradually transform into one which is entirely devoid of such protection, a process of evolution which I am convinced has taken place in many and diverse groups of lower Vertebrates.

I have recently adduced this example of the *Clariinæ* in endeavouring to refute Prof. von Méhely's unacceptable theory that, in the group of *Lacerta muralis*, the more feebly ossified skulls represent the more primitive types. In a recent reply to my criticisms*, my distinguished colleague of Budapest more clearly expresses his general views on evolution. - As he thinks that the lizards with toothless palate are the oldest ("dass die Stammform noch keine Gaumenzähne besass," p. 474), that the pterygoid teeth were acquired by the later forms, and as he endorses the extraordinary Jaekelian hypothesis of fishes having been derived from land Vertebrates (*Prototetrapoda*), I fear further discussion with him on such matters would be mere waste of time. Nor can I feel sympathy for innovations in classification which are expressed by such barbarous terms as *Neolacertæ* and *Archæolacertæ*.

CLARIINÆ.

Synopsis of the Genera.

A. Dorsal fin single, formed entirely of articulated rays.

1. Eye with a free border; pectoral and ventral fins well developed.

Sides of head protected by bony shields 1. *Clarias* Gron.

Sides of head naked, only the postorbital shield
being present 2. *Allabenchelys* Blgr.

2. Eye without free border; sides of head naked.

Postorbital shield present; pectoral fins well developed, ventrals small 3. *Clariallabes* Blgr.

Postorbital shield absent; pectoral and ventral fins
very small 4. *Gymnallabes* Gthr.

Postorbital shield absent; pectoral fins rudimentary
or absent, ventrals absent 5. *Channallabes* Gthr.

B. Dorsal fin divided into two, the posterior portion adipose.

Sides of head protected by bony shields; adipose
dorsal fin large and supported by bony rays (the
produced neural spines) 6. *Heterobranchus* Geoffr.

Sides of head naked, only the postorbital shield being
present; adipose dorsal fin small 7. *Dinotopterus* Blgr.

1. CLARIAS.

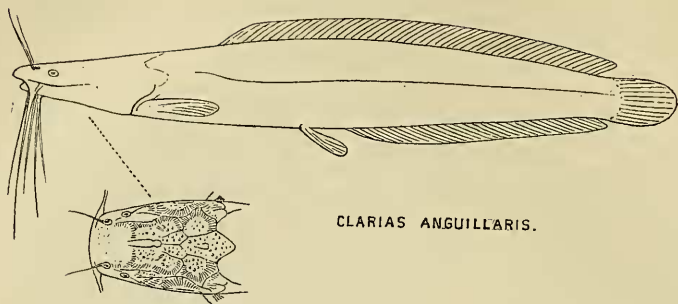
Gronovius, Zoophyl. p. 100 (1781); Günther, Cat. Fishes, v. p. 248 (1864); Boulenger, Poiss. Bass. Congo, p. 248 (1901), and Fishes of the Nile, p. 278 (1907).

Macropteronotus, part., Lacepède, Hist. Poiss. v. p. 84 (1803).

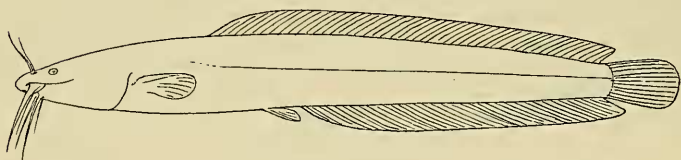
South-Eastern Asia, Syria, and Africa. 32 species are known from the latter part of the world.

* Ann. Mus. Hung. v. 1907, p. 469.

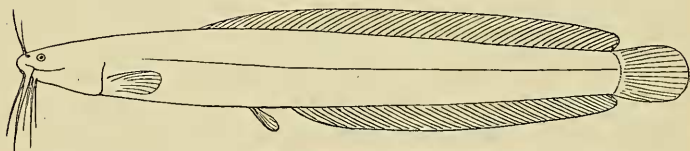
Text-fig. 248.



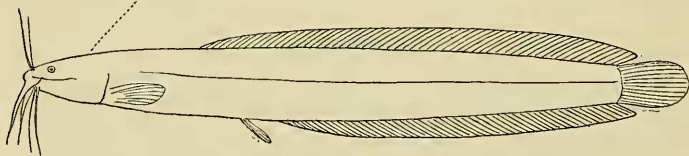
CLARIAS ANGUILLARIS.



CLARIAS CARSONII.



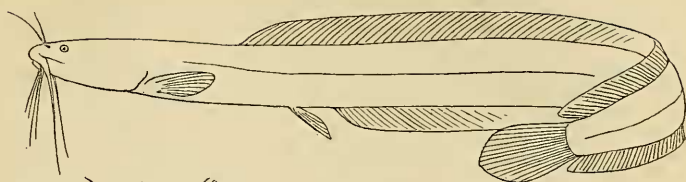
CLARIAS LÆVICEPS.



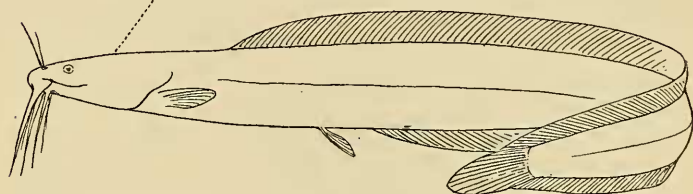
ALLABENCHELYS BREVIOR.

Showing gradual transition from typical *Clarias*

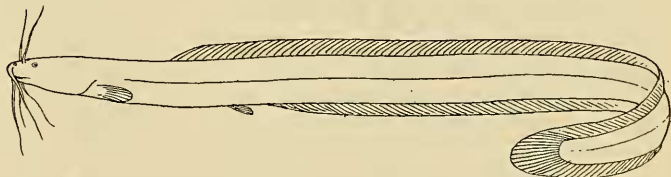
Text-fig. 249.



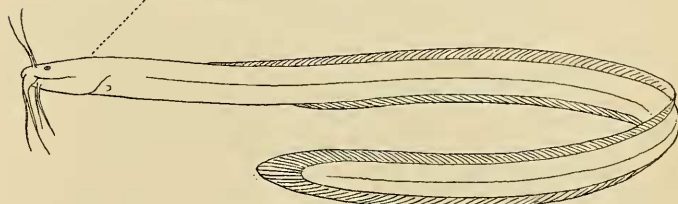
ALLABENCHELYS LONGICAUDA.



CLARIALLABES MELAS.



GYMNALLABES TYPUS.



CHANNALABES APUS.

to Eel-shaped form, *Channalabes*.

Synopsis of the Species.

1. Ventral fins midway between end of snout and root of caudal, or a little nearer (less than $\frac{1}{3}$) the former; nasal barbel shorter than head*.
- A. Maxillary barbel not or but little longer than head, except in the very young; at least 20 gill-rakers on anterior arch.
 1. Length of head 3 to $3\frac{3}{4}$ times in total length†; vomerine teeth forming an uninterrupted or scarcely interrupted band or patch; distance between occipital process and dorsal fin at least 4 times in length of head.
 - a. Head granulate above, except in the very young; D. 62-82; A. 46-65.
 - a. Vomerine teeth mostly pointed or granular-subconical, forming a band which is not broader than the band of præmaxillary teeth; distance between occipital process and dorsal fin 4 to 7 times in length of head.

20-27 gill-rakers on anterior arch; distance between dorsal and caudal $1-1\frac{1}{2}$ diameters of eye	1. <i>C. anguillaris</i> L.
49-50 gill-rakers on anterior arch; distance between dorsals and caudal 1-2 diameters of eye	2. <i>C. gariepinus</i> Burch.
87 gill-rakers on anterior arch; distance between dorsal and caudal 3 diameters of eye	3. <i>C. moorii</i> Blgr.
 - β. Vomerine teeth all or mostly granular, forming a crescentic band with or without posterior process.

30-40 gill-rakers on anterior arch; band of vomerine teeth as broad as or a little narrower than band of præmaxillary teeth; head not more than $1\frac{2}{3}$ as long as broad, 4-7 times its distance from dorsal ..	4. <i>C. senegalensis</i> C. & V.
25 (in very young)-110 gill-rakers on anterior arch; band of vomerine teeth nearly 1 to $1\frac{1}{2}$ as broad as præmaxillary band; head not more than $1\frac{2}{3}$ as long as broad, 4-7 times its distance from dorsal	5. <i>C. mossambicus</i> Peters.
90 gill-rakers on anterior arch; band of vomerine teeth as broad as præmaxillary band; head $1\frac{5}{7}$ as long as broad, 9 times its distance from dorsal ...	6. <i>C. vinciguerræ</i> Blgr.
35 (in very young)-135 gill-rakers on anterior arch; band of vomerine teeth $1\frac{1}{2}$ to $2\frac{1}{2}$ times width of præmaxillary band; head not more than $1\frac{2}{3}$ as long as broad, 4-7 times its distance from dorsal	7. <i>C. lazera</i> C. & V.
 - γ. Vomerine teeth granular, forming a large semi-elliptic patch, squarely truncate behind, its longitudinal diameter 3 times that of præmaxillary band; 35 gill-rakers on anterior arch; distance between dorsal and caudal $\frac{1}{4}$ length of head
 8. *C. mellandi* Blgr. |
 - b. Head smooth above; D. 78-85, A. 60-70; vomerine teeth granular, forming a band which is not broader than præmaxillary band; 45-70 gill-rakers on anterior arch; distance between dorsal and caudal not greater than diameter of eye
 9. *C. tsanensis* Blgr. |
 2. Length of head 4 times in total length; vomerine teeth mostly granular, forming a band which is a little narrower than the præmaxillary band and interrupted in the middle; head granulate above; D. 63-72, A. 50-52; distance between occipital process and dorsal $\frac{2}{3}$ length of head; 55 gill-rakers on anterior arch
 10. *C. capensis* C. & V. |
- B. Maxillary barbel $1\frac{1}{2}$ length of head; 12 gill-rakers on anterior arch; head feebly granulate above, $1\frac{1}{4}$ as long as broad; vomerine teeth conical; D. 65-70, A. 56-62
 11. *C. platycephalus* Blgr. |

* The head is measured to the extremity of the occipital process.

† Caudal fin not included.

II. Ventral fins once and $\frac{1}{4}$ to twice as distant from root of caudal as from end of snout, or nasal barbel at least as long as head; head smooth or very feebly granulate above; less than 30 gill-rakers on anterior arch.

A. Dorsal separated from caudal by a space at least equal to diameter of eye; nasal barbel shorter than head.

1. Maxillary barbel shorter than head; head $1\frac{1}{3}$ – $1\frac{1}{2}$ as long as broad, its length 4–5 times in total length; distance between occipital process and dorsal $\frac{2}{3}$ – $\frac{3}{4}$ length of head; 10–13 gill-rakers on anterior arch; D. 65–78, A. 57–64.

Maxillary barbel $\frac{3}{5}$ – $\frac{3}{4}$ length of head, not reaching beyond gill-opening 12. *C. carsonii* Blgr.

Maxillary barbel $\frac{5}{8}$ length of head, reaching a little beyond base of pectoral 13. *C. poensis* Blgr.

2. Maxillary barbel as long as or a little longer than head; distance between occipital process and dorsal $\frac{2}{3}$ – $\frac{3}{4}$ length of head, which is 4–5 times in total length.

Head $1\frac{1}{3}$ as long as broad; D. 75–84, A. 60–70; 10

gill-rakers on anterior arch 14. *C. submarginatus* Peters.

Head $1\frac{1}{4}$ – $1\frac{1}{3}$ as long as broad; D. 70–72, A. 50–58;

13–15 gill-rakers on anterior arch 15. *C. liocephalus* Blgr.

Head slightly longer than broad; D. 58–60, A. 40–42;

20 gill-rakers on anterior arch 16. *C. breviceps* Blgr.

3. Maxillary barbel once and $\frac{1}{2}$ to twice as long as head; head $1\frac{1}{3}$ – $1\frac{1}{2}$ as long as broad; 12–15 gill-rakers on anterior arch.

Length of head 4– $4\frac{1}{2}$ times in total; distance between

occipital process and dorsal $\frac{1}{3}$ – $\frac{1}{2}$ length of head;

distance between ventrals and caudal $1\frac{1}{4}$ – $1\frac{1}{2}$ that

between end of snout and ventrals; D. 70–80,

A. 52–60 17. *C. walkeri* Gthr.

Length of head 5– $5\frac{1}{2}$ times in total; distance between

occipital process and dorsal $\frac{2}{3}$ – $\frac{3}{4}$ length of head;

distance between ventrals and caudal at least $1\frac{2}{3}$ that

between end of snout and ventrals; D. 80, A. 70–73. 18. *C. longior* Blgr.

B. Dorsal and anal in contact with or very narrowly separated from, but not adnate to the caudal; maxillary barbel longer than head.

1. Nasal barbel at least as long as head, which is $1\frac{1}{3}$ – $1\frac{1}{2}$ as long as broad; distance between occipital process and dorsal $\frac{1}{3}$ – $\frac{1}{2}$ length of head.

a. Vomerine teeth conical or subgranular, in a crescentic band.

Length of head $3\frac{1}{2}$ – $4\frac{1}{3}$ times in total; maxillary

barbel $1\frac{1}{2}$ – $1\frac{3}{4}$ length of head; 20–25 gill-rakers on

anterior arch; D. 70–82, A. 55–63 19. *C. angolensis* Sldr.

Length of head 4– $4\frac{1}{4}$ times in total; maxillary barbel

2– $2\frac{1}{2}$ length of head; 17–22 gill-rakers on anterior

arch; D. 78–87, A. 55–67 20. *C. bythipogon* Sauv.

Length of head 4– $4\frac{1}{2}$ times in total; maxillary barbel

$1\frac{1}{2}$ – $1\frac{3}{4}$ length of head; 14–15 gill-rakers on anterior

arch; D. 65–78, A. 55–62; occipital process much

longer than broad 21. *C. alluandi* Blgr.

Length of head $4\frac{1}{2}$ –5 times in total; maxillary barbel

$1\frac{1}{3}$ –2 length of head; 16–18 gill-rakers on anterior

arch; D. 82–91, A. 68–72 22. *C. werneri* Blgr.

b. Vomerine teeth granular, in a fan-shaped

patch; length of head 4 times in total;

maxillary barbel $1\frac{1}{2}$ length of head; 15

gill-rakers on anterior arch; D. 80,

A. 63 23. *C. macromystar* Gthr.

2. Nasal barbel shorter than head.

a. Length of head $3\frac{1}{2}$ – $4\frac{1}{2}$ times in total; distance between occipital process and dorsal $\frac{2}{3}$ – $\frac{3}{4}$ length of head; D. 60–72, A. 44–55.

Pectoral spine strongly serrated on both sides; 12–15

gill-rakers on anterior arch 24. *C. dumerilii* Sldr.

Pectoral spine feebly serrated; 20 gill-rakers on

anterior arch 25. *C. liberiensis* Sldr.

b. Length of head $4\frac{2}{3}$ - $5\frac{1}{2}$ times in total; D. 78-87, A. 68-80; 15-20 gill-rakers on anterior arch.

Head $1\frac{2}{5}$ - $1\frac{1}{2}$ as long as broad; nasal barbel $\frac{3}{4}$ - $\frac{4}{5}$ length of head 26. *C. pachynema* Blgr.
 Head $1\frac{1}{4}$ - $1\frac{1}{2}$ as long as broad; nasal barbel $\frac{1}{2}$ - $\frac{2}{3}$ length of head 27. *C. lœviceps* Gill.

C. Dorsal and anal embracing and adnate to base of caudal; maxillary barbel $\frac{4}{5}$ - $1\frac{1}{3}$ length of head.

1. Head $1\frac{1}{4}$ - $1\frac{1}{2}$ as long as broad.

Length of head 4 times in total; ventrals a little nearer end of snout than caudal; D. 55, A. 50; pectoral spine not serrated on outer side 28. *C. buettikoferi* Sldr.

Length of head 5 times in total; distance between ventrals and caudal $1\frac{1}{2}$ that between ventrals and end of snout; D. 80, A. 65; 15 gill-rakers on anterior arch; pectoral spine serrated on both sides 29. *C. amplexicauda* Blgr.

2. Head $1\frac{2}{5}$ to $1\frac{1}{2}$ as long as broad.

Length of head $4\frac{1}{2}$ - $5\frac{1}{4}$ times in total, 3 times its distance from dorsal; distance between ventrals and caudal $1\frac{1}{2}$ that between ventrals and end of snout; maxillary barbel as long as or a little longer than head; D. 80-90, A. 67-73; 12 gill-rakers on anterior arch; pectoral spine not serrated on outer side 30. *C. theodoreæ* M. Web.

Length of head 5 times in total, 3 times its distance from dorsal; distance between ventrals and caudal $1\frac{3}{4}$ that between ventrals and end of snout; maxillary barbel a little shorter than head; D. 83, A. 68; 20 gill-rakers on anterior arch; pectoral spine not serrated on outer side 31. *C. fouloni* Blgr.

Length of head 5-6 times in total, $1\frac{1}{2}$ - $1\frac{2}{3}$ its distance from dorsal; distance between ventrals and caudal $1\frac{2}{3}$ that between ventrals and end of snout; maxillary barbel a little longer than head; D. 89-93, A. 70-78; 8-10 gill-rakers on anterior arch; pectoral spine serrated on outer side 32. *C. salæ* Hubr.

1. CLARIAS ANGUILLARIS.

Silurus anguillaris Linnæus, in Hasselquist, Reise Palæst. p. 415 (1762), and Syst. Nat. i. p. 502 (1766).

Macropteronotus charmuth, part., Lacepède, Hist. Poiss. v. p. 85 (1803).

Macropteronotus anguillaris, part., Rüppell, Beschr. n. Fische Nil, p. 5 (1829).

Clarias hasselquistii Cuvier & Valenciennes, Hist. Poiss. xv. p. 362, pl. cccclvi. (1840).

Clarias anguillaris Günther, Cat. Fish. v. p. 14 (1864); Peters, Reise Mossamb. iv. p. 36 (1868); Günther, Petherick's Trav. ii. p. 217 (1869); Panceri, Rend. Acc. Sc., Soc. R. Nap. xii. 1873, p. 110; Boulenger, Fish. Nile, p. 280, pl. xlix. (1907).

Clarias parvimanus Günther, opp. cit. pp. 15, 218.

Depth of body $5\frac{1}{3}$ to $7\frac{3}{4}$ times in total length, length of head 3 to $3\frac{3}{4}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, its upper surface coarsely granulate in the adult; occipital process angular; frontal fontanelle elliptical, sole-shaped or knife-shaped, 3 to 5 times as long as broad, $3\frac{1}{2}$ to 5 times in length of head; occipital

fontanelle small, in advance of the occipital process; eye 2 (very young) to $4\frac{1}{2}$ times in length of snout, 3 to 9 times in interorbital width; width of mouth nearly equal to interorbital width; band of premaxillary teeth $5\frac{1}{2}$ to 8 times as long as broad; vomerine teeth mostly conical, sometimes subgranular behind, forming a crescentic, continuous or narrowly interrupted band which is as broad as or narrower than premaxillary band; nasal barbel $\frac{1}{4}$ to $\frac{2}{3}$ length of head ($\frac{1}{2}$ to $\frac{2}{3}$ in the very young); maxillary barbel $\frac{2}{3}$ to $\frac{5}{6}$ length of head ($\frac{3}{4}$ to once and $\frac{1}{5}$ in the very young), reaching gill-opening or extremity of pectoral spine; outer mandibular barbel $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as inner, which measures $\frac{1}{3}$ to $\frac{2}{3}$ length of head ($\frac{2}{3}$ to nearly once in the very young). Gill-rakers rather short, 20 to 27 on anterior arch. Clavicles hidden under the skin. Dorsal 65 to 76, its distance from occipital process $\frac{1}{7}$ to $\frac{1}{4}$ length of head, its distance from caudal fin 1 to $2\frac{1}{2}$ diameter of eye. Anal fin with 53 to 62 rays, narrowly separated from caudal. Pectoral $\frac{2}{3}$ to $\frac{1}{2}$ length of head, the spine serrated on the outer border and $\frac{1}{2}$ (young) to $\frac{2}{3}$ the length of the fin. Ventral slightly nearer end of the snout than root of caudal. Caudal not quite half length of head. Upper parts olive or dark brown, uniform or with darker marblings, lower parts white; a more or less distinct dark band on each side of the lower surface of the head; fins dark, edged with yellow or orange, sometimes with small black spots.

Reaches a length of 750 millimetres.

Nile, Lake Victoria.

2. *CLARIAS GARIEPINUS*.

Silurus (Heterobranchus) gariepinus Burchell, Trav. Int. S. Afr. i. p. 425, fig. (1822).

Clarias capensis (non C. & V.) A. Smith, Ill. Zool. S. Afr., Pisc. pl. xxvii. (1845).

Clarias mossambicus, part., Peters, Mon. Berl. Ac. 1852, p. 682, and Reise Mossamb. iv. p. 32, pl. vi. figs. 1 & 2, and pl. vii. figs. 2 & 3 (1868).

Clarias gariepinus Günther, Cat. Fish. v. p. 14 (1864); M. Weber, Zool. Jahrb., Syst. x. 1897, p. 149; Boulenger, Poiss. Bass. Congo, p. 254 (1901).

Depth of body $6\frac{1}{5}$ to 7 times in total length, length of head 3 to $3\frac{1}{2}$ times. Head $1\frac{2}{3}$ to $1\frac{3}{5}$ times as long as broad, its upper surface coarsely granulate in the adult; occipital process angular; frontal fontanelle 3 to $3\frac{1}{2}$ times as long as broad, 4 times in length of head; occipital fontanelle very small, in advance of occipital process; eye very small, 3 times in length of snout and 5 or 6 times in interorbital width in the adult; width of mouth nearly equal to interorbital width, $\frac{2}{3}$ length of head; band of premaxillary teeth 5 or 6 times as long as broad; vomerine teeth mostly conical, or granular-subconical, forming a crescentic band, which may be slightly interrupted in the middle, where it is

nearly as broad as or narrower than præmaxillary band; nasal barbel $\frac{1}{5}$ to $\frac{1}{3}$ length of head; maxillary barbel a little shorter than head, reaching base or second third of pectoral spine; outer mandibular barbel about $1\frac{1}{2}$ as long as inner, which measures $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Gill-rakers on first arch fine and close-set, 40 to 50 in number. Clavicles not exposed. Dorsal 68-79, its distance from occipital process $\frac{1}{5}$ to $\frac{1}{4}$ length of head, its distance from caudal greater than diameter of eye. Anal 53-60, not reaching caudal. Pectoral $\frac{2}{5}$ to $\frac{1}{2}$ length of head, the spine serrated on the outer border, $\frac{2}{3}$ or $\frac{3}{4}$ the length of the fin. Ventral nearly equally distant from end of snout and from caudal. Caudal about $\frac{1}{2}$ length of head. Olive above, uniform or marbled with dark brown, white below.

Total length 620 millim.

South Africa (Orange River, Natal, Transvaal), Mozambique, Angola.

3. CLARIAS MOORII.

Boulenger, Ann. & Mag. N. H. (7) viii. 1901, p. 13, and Fish. Nile, p. 283, pl. 1. (1907).

Depth of body nearly 7 times in total length, length of head $3\frac{1}{4}$ times. Head once and $\frac{2}{5}$ as long as broad, its upper surface coarsely granulate; occipital process angular, a little longer than broad; frontal fontanelle knife-shaped, thrice as long as broad, nearly 4 times in length of the head; occipital fontanelle small, in advance of occipital process; eye $3\frac{1}{3}$ times in length of snout, $6\frac{2}{3}$ times in interorbital width; width of the mouth nearly equal to interorbital width; band of præmaxillary teeth 6 times as long as broad; vomerine teeth mostly pointed, a few in the middle granular, forming a crescentic band which is as broad as the præmaxillary band. Nasal barbel $\frac{1}{5}$ length of head; maxillary barbel a little more than half length of head, extending to root of pectoral; outer mandibular barbel once and $\frac{1}{2}$ as long as inner, which measures nearly $\frac{1}{3}$ length of head. Gill-rakers long and closely set, 87 on anterior arch. Clavicles striated, distinct under the thin skin. Dorsal 66, its distance from occipital process $\frac{1}{5}$ length of head, its distance from caudal fin 3 times length of eye. Anal 54, separated from the caudal by a distinct interspace. Pectoral fin nearly half length of head, the spine serrated on the outer border and $\frac{2}{3}$ the length of the fin. Ventral a little nearer end of the snout than root of caudal. Caudal about half length of head. Olive-brown above, white beneath.

Total length 590 millim.

Lake Albert Edward.

4. CLARIAS SENEGALENSIS.

Clarias senegalensis Cuvier & Valenciennes, Hist. Poiss. xv. p. 376 (1840); Steindachner, Sitzb. Ak. Wien, lx. i. 1869, p. 978.

Clarias anguillaris, part., Günther, Cat. Fish. v. p. 14 (1864).
Clarias budgetti Boulenger, Proc. Zool. Soc. 1900, p. 513.

Depth of body $6\frac{1}{2}$ to $7\frac{1}{2}$ times in total length, length of head 3 to $3\frac{2}{3}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, upper surface more or less coarsely granulate in the adult; occipital process angular; frontal fontanelle sole-shaped, 3 to 5 times as long as broad, 4 to $4\frac{1}{2}$ times in length of head; occipital fontanelle very small, in advance of occipital process; eye small, 3 to 4 times in length of snout, $5\frac{1}{2}$ to 7 times in interorbital width in the adult; width of mouth nearly equal to interorbital width, $\frac{2}{5}$ length of head; band of præmaxillary teeth 6 to 8 times as long as broad; vomerine teeth mostly granular, forming a crescentic band, which is as broad as or a little narrower than the præmaxillary band; nasal barbel $\frac{1}{3}$ to $\frac{1}{2}$ length of head; maxillary barbel $\frac{3}{4}$ to once length of head (a little longer in the young), reaching about middle or end of pectoral spine; outer mandibular barbel $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as inner, which measures $\frac{2}{5}$ to $\frac{2}{3}$ length of head. Gill-rakers on first arch fine and closely set, 30 to 40 in number. Clavicles striated and covered with thin skin. Dorsal 65–80, its distance from the occipital process $\frac{1}{2}$ to $\frac{1}{4}$ length of head, its distance from caudal not or but little greater than diameter of eye. Anal 46–58, narrowly separated from caudal. Pectoral nearly $\frac{1}{2}$ length of head, the spine serrated on the outer border, $\frac{2}{3}$ the length of the fin. Ventrals midway between end of snout and caudal or a little nearer the former. Caudal about $\frac{1}{2}$ length of head. Olive or dark brown above, with or without darker spots or marblings, white beneath; anal with a light edge.

Total length 850 millim.

Senegal, Gambia, Niger. Type (in Paris Mus.), stuffed, examined.

5. CLARIAS MOSSAMBICUS.

Clarias mossambicus, part., Peters, Mon. Berl. Ac. 1852, p. 682, and Reise Mossamb. iv. p. 32, pl. vi. fig. 3 (1868).

Clarias gariepinus, part., Günther & Playfair, Fish. Zanzib. p. 113 (1866).

Clarias mossambicus Fischer, Jahrb. Hamb. Wiss. Anst. i. 1884, p. 28; Vinciguerra, Ann. Mus. Genova (2) xv. 1895, p. 31, fig. 1, and xvii. 1896, p. 25; Pfeffer, Thierw. O.-Afr., Fische, p. 27, fig. (1896); Pellegrin, Mém. Soc. Zool. France, xvii. 1905, p. 176.

Clarias robecchii Vinciguerra, Ann. Mus. Genova (2) xiii. 1893, p. 450, and xv. 1895, p. 30, fig.; Boulenger, Poiss. Bass. Congo, p. 253 (1901), and Fish. Nile, p. 285, pl. li. fig. 1 (1907).

Clarias lazera (non Cuvier & Valenciennes) Günther, Proc. Zool. Soc. 1894, p. 89; Boulenger, Proc. Zool. Soc. 1901, ii. p. 161.

Clarias smithii Günther, Proc. Zool. Soc. 1896, p. 219, fig.

Clarias microphthalmus Pfeffer, op. c. p. 28; Hilgendorf, Zool. Jahrb., Syst. xxii. 1905, p. 410.

Clarias güntheri Pfeffer, l. c.

Depth of body 6 to 8 times in total length, length of head 3 to $3\frac{2}{3}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, its upper surface coarsely granulate in the adult; occipital process angular; frontal fontanelle sole-shaped or knife-shaped, $2\frac{1}{2}$ to 4 times as long as broad, $3\frac{1}{2}$ to $5\frac{1}{2}$ times in length of head; occipital fontanelle small, in advance of occipital process; eye $2\frac{1}{2}$ (young) to 4 times in length of the snout, 4 (young) to 8 times in interorbital width; width of mouth equal to or a little less than interorbital width; band of premaxillary teeth 4 (young) to 8 times as long as broad; vomerine teeth granular, forming a crescentic band with or without a short posterior median process, this band 1 to $1\frac{1}{2}$ times the width of the premaxillary band; nasal barbel $\frac{1}{5}$ to $\frac{2}{5}$ length of head ($\frac{1}{2}$ to $\frac{2}{3}$ in the very young); maxillary barbel $\frac{2}{3}$ to once length of head (a little longer in the very young), not extending beyond middle of pectoral fin; outer mandibular barbel $1\frac{1}{4}$ to $1\frac{3}{5}$ times as long as inner, which measures $\frac{1}{2}$ to $\frac{3}{4}$ length of head. Gill-rakers long and closely set, 25 (very young) to 110 on anterior arch. Clavicles hidden under the skin. Dorsal 62 to 78, its distance from occipital process $\frac{1}{4}$ to $\frac{1}{4}$ length of head, its distance from caudal fin one to two diameters of eye. Anal 50 to 62, separated from the caudal by a distinct interspace. Pectoral $\frac{2}{5}$ to $\frac{1}{2}$ length of head, the spine serrated on the outer border and $\frac{2}{5}$ to $\frac{3}{4}$ the length of the fin. Ventral equally distant from end of snout and from root of caudal, or a little nearer the former. Caudal $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Olive to blackish above, white beneath; a more or less distinct dark band on each side of the lower surface of the head.

Total length 650 millim.

East Africa, from Abyssinia and Lake Victoria to Lake Tanganyika and the Zambesi.

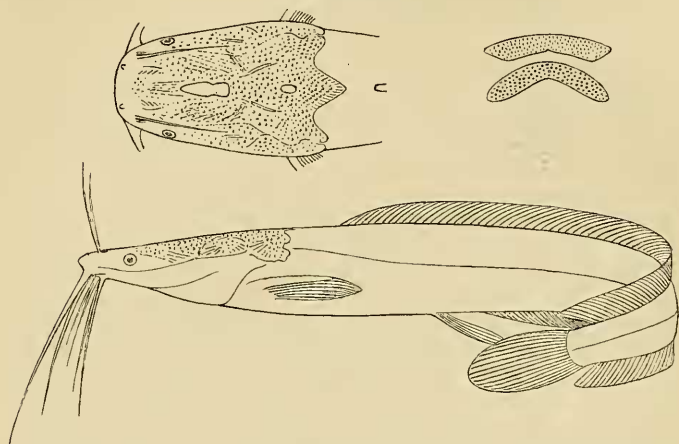
6. CLARIAS VINCIGUERRÆ.

Boulenger, Ann. & Mag. N. H. (7) x. 1902, p. 438.

Depth of body 7 times in total length, length of head 3 times. Head $1\frac{1}{2}$ times as long as broad, upper surface strongly granulated; occipital process angular; frontal fontanelle knife-shaped, $3\frac{1}{2}$ times as long as broad, $4\frac{1}{2}$ times in length of head; occipital fontanelle small, in advance of occipital process; eye small, 3 times in length of snout, $5\frac{1}{2}$ times in interorbital width; width of mouth a little less than interorbital width, $\frac{2}{5}$ length of head. Band of premaxillary teeth $5\frac{1}{2}$ times as long as broad; vomerine teeth granular, forming a crescentic band which is as broad as the premaxillary band. Nasal barbel nearly $\frac{2}{5}$ length of head; maxillary barbel slightly shorter than head, reaching base of pectoral fin; outer mandibular barbel $\frac{2}{3}$ length of head, inner $\frac{2}{5}$. Gill-rakers fine and closely set, about 90 on first arch. Dorsal 67, its distance from the occipital process $\frac{1}{5}$ length of head, its distance from the caudal 2 diameters of eye. Anal 53, narrowly separated from caudal. Pectoral not quite $\frac{1}{2}$ length of head, the spine finely

serrated on the outer border, $\frac{5}{7}$ the length of the fin. Ventral a little nearer end of snout than caudal. Latter nearly $\frac{1}{2}$ length

Text-fig. 250.

*Clarias vinciguerræ.*

of head. Dark brown above, whitish beneath; anal and caudal with a fine light edge.

Total length 410 millim.

Kassam River at Awhorra Mullka, Shoa, about 4000 feet.

7. CLARIAS LAZERA.

Silurus anguillaris (non Linnæus) A. Russell, Nat. Hist. Aleppo, 2nd ed. ii. p. 217, pl. viii. (1794).

Macropteronotus charmuth, part., Lacepède, Hist. Poiss. v. p. 85 (1803).

Heterobranchus anguillaris (non Linnæus) I. Geoffroy, Descr. Egypte, Poiss. p. 305, pl. xvi. fig. 1 (1827); Joannis, Mag. Zool. 1835, pl. xiv.

Garmont Laséra, Rifaud, Voy. Egypte, pl. cxcv. (1830).

Clarias lazera Cuvier & Valenciennes, Hist. Poiss. xv. p. 372 (1840); Günther, Cat. Fish. v. p. 16 (1864); Peters, Reise Mossamb. iv. p. 36 (1868); Günther, Petherick's Trav. ii. p. 218 (1869); Boulenger, Poiss. Bass. Congo, p. 252 (1901); Hilgendorf, Zool. Jahrb., Syst. xxii. 1905, p. 409; Boulenger, Fish. Nile, p. 288, pl. lii. (1907).

Clarias syriacus Cuvier & Valenciennes, t. c. p. 375.

Clarias capensis (non Cuvier & Valenciennes) Huxley, Mem. Geol. Surv. x. pp. 30 & 32, fig. (1861).

? *Clarias ngamensis* Castelnau, Poiss. Afr. Austr. p. 63 (1861).

Clarias orontis Günther, Cat. Fish. v. p. 15; Sauvage, N. Arch. Mus. (2) vii. 1884, p. 18, pl. 1. fig. 2.

Clarias macracanthus Günther, t.c. pp. 16 & 429, and Petherick's Trav. ii. p. 219; Lortet, Arch. Mus. Lyon, iii. 1883, p. 151, pl. xvii.; Tristram, Faun. Palest. p. 169, pl. xix. fig. 1 (1884).

Clarias xenodon Günther, Cat. Fish. v. p. 16.

Clarias longiceps Boulenger, Ann. Mus. Congo, Zool. i. 1899, p. 103, pl. xli. fig. 1, and Poiss. Bass. Congo, p. 256 (1901).

Depth of body 5 to 9 times in total length, length of head 3 to $3\frac{1}{2}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, its upper surface coarsely granulate in the adult; occipital process angular or rounded; frontal fontanelle sole-shaped or knife-shaped, $2\frac{1}{2}$ to 4 times as long as broad, $3\frac{1}{2}$ to 6 times in length of head; occipital fontanelle small, in advance of occipital process; eye 2 (young) to $4\frac{1}{3}$ times in length of snout, 4 to 7 times in interorbital width; width of mouth equal to or a little less than interorbital width; band of premaxillary teeth 4 (young) to 6 times as long as broad; vomerine teeth granular, forming a crescentic band with or without a posterior median process, its greatest width, in the middle, $1\frac{1}{2}$ to $2\frac{1}{2}$ times that of the premaxillary band; anterior mandibular teeth pointed, posterior granular; nasal barbel $\frac{1}{3}$ to $\frac{2}{3}$ length of head (up to $\frac{1}{5}$ in the very young); maxillary barbel usually a little shorter than head, sometimes a little longer (up to once and a half in the very young), reaching extremity of pectoral spine or a little beyond extremity of pectoral fin; outer mandibular barbel once and $\frac{1}{5}$ to once and $\frac{2}{3}$ as long as inner, which measures $\frac{2}{5}$ to $\frac{3}{5}$ length of head. Gill-rakers long and closely set, 35 (very young) to 135 on anterior arch. Clavicles striated or rugose with granulations, more or less distinct under the thin skin. Dorsal 62 to 82, its distance from the occipital process $\frac{1}{4}$ to $\frac{1}{2}$ length of head, its distance from caudal not greater than diameter of eye. Anal 50 to 65, narrowly separated from caudal. Pectoral $\frac{2}{5}$ to $\frac{1}{2}$ length of head, the spine serrated on the outer side and $\frac{2}{5}$ (young) to $\frac{3}{4}$ the length of the fin. Ventral equally distant from end of snout and root of caudal, or a little nearer the former. Caudal about half length of head.

Greyish olive or olive-brown to blackish above, uniform or marbled with lighter, white or greyish beneath; vertical fins dark, often with a yellowish edge; usually a more or less distinct dark band on each side of the lower surface of the head. Young specimens often with a dark bar, edged with yellowish in front and behind, across the caudal fin. Black spots sometimes present on the caudal fin.

Total length 1170 millim.

Syria, Nile, Senegal, Niger, Congo.

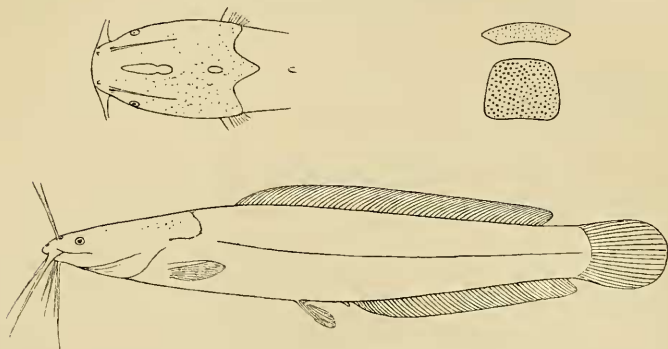
8. CLARIAS MELLANDI.

Boulenger, Ann. & Mag. N. H. (7) xvi. 1905, p. 644.

Depth of body $5\frac{1}{2}$ times in total length, length of head $3\frac{1}{4}$ times. Head once and $\frac{2}{3}$ as long as broad, feebly granulate above; occipital process angular; frontal fontanelle knife-shaped, $\frac{1}{3}$ length

of head; occipital fontanelle very small, in advance of occipital process; eye $3\frac{1}{2}$ times in length of snout, $5\frac{1}{2}$ times in interorbital width, which exceeds width of mouth and equals $\frac{1}{3}$ length of head; band of præmaxillary teeth 4 times as long as broad; vomerine

Text-fig. 251.

*Clarias mellandi*.

teeth granular, forming a large semielliptic patch, squarely truncate behind, its longitudinal diameter 3 times that of the band of præmaxillary teeth; nasal barbel $\frac{2}{5}$ length of head; maxillary barbel $\frac{2}{5}$ length of head, reaching gill-opening; outer mandibular barbel $\frac{2}{5}$ length of head. Gill-rakers long, about 35 on anterior arch. Clavicles striated, distinct under the thin skin. Dorsal 65, its distance from occipital process $\frac{1}{6}$ length of head, its distance from caudal fin $\frac{1}{4}$ length of head. Anal 55, very narrowly separated from caudal. Pectoral $\frac{2}{5}$ length of head, its spine serrated on the outer border and $\frac{3}{4}$ the length of the fin. Ventral slightly nearer end of snout than caudal. Caudal $\frac{1}{2}$ length of head. Olive-brown above, marbled with darker, whitish beneath; a dark streak on each side of the throat.

Total length 345 millim.

Lake Bangweu.

Young specimens (85–145 millim. long) recently obtained in Angola, in shallow swamps at Dongwenna, Mossamedes, by Dr. Ansorge, appear to me to be referable to this species. In the smallest, the vomerine band of teeth is crescentic, and only a little broader than the præmaxillary, whilst in the largest it forms almost a half-disk. 16–20 gill-rakers on anterior arch. Dorsal 70. Anal 60. Distance between dorsal and caudal $\frac{1}{4}$ to $\frac{1}{3}$ length of head.

9. CLARIAS TSANENSIS.

Boulenger, Ann. & Mag. N. H. (7) x. 1902, p. 438, and Fish. Nile, p. 292, pl. li. fig. 2 (1907).

Depth of body $6\frac{1}{2}$ to $7\frac{1}{2}$ times in total length, length of head

$3\frac{1}{3}$ to $3\frac{2}{3}$ times. Head $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, perfectly smooth above; vertex very strongly flattened, almost concave in the adult; occipital process angular; frontal fontanelle knife-shaped, 3 to 4 times as long as broad, 4 to 5 times in length of head; occipital fontanelle indistinct; eye $2\frac{1}{2}$ (young) to 4 times in length of snout, 4 to $6\frac{2}{3}$ times in interorbital width; width of mouth nearly equal to interorbital width; band of premaxillary teeth 4 to $5\frac{1}{2}$ times as long as broad; vomerine teeth granular, forming a crescentic band which is as broad as the premaxillary band; nasal barbel $\frac{1}{3}$ to $\frac{1}{2}$ length of head ($\frac{3}{4}$ in the very young); maxillary barbel $\frac{3}{4}$ to once length of head (longer in the very young), reaching base or extremity of pectoral spine; outer mandibular barbels $\frac{1}{2}$ to $\frac{1}{5}$ length of head (as long as head in the very young). Gill-rakers long and closely set, 45 (young) to 70 on anterior arch. Dorsal 78 to 85, its distance from the occipital process $\frac{1}{5}$ to $\frac{1}{4}$ length of head, its distance from caudal fin equal to or a little less than diameter of eye. Anal 60 to 70, touching root of caudal. Pectoral not quite half length of head, the spine very slightly serrated on the outer border, $\frac{2}{3}$ (young) to $\frac{2}{3}$ the length of the fin. Ventral equally distant from end of snout and from caudal, or a little nearer the former. Caudal nearly $\frac{1}{2}$ length of the head. Dark olive-brown above, greyish beneath.

Total length 430 millim.

Lake Tsana, Abyssinia.

10. CLARIAS CAPENSIS.

Cuvier & Valenciennes, Hist. Poiss. xv. p. 377 (1840);

Boulenger, Poiss. Bass. Congo, p. 255 (1901).

Depth of body $6\frac{2}{3}$ to $7\frac{1}{3}$ times in the total length, length of head 4 times. Head once and $\frac{1}{2}$ as long as broad, its upper surface coarsely granulate; occipital process angular; frontal fontanelle $3\frac{1}{2}$ to nearly 4 times as long as broad, $\frac{1}{4}$ to $\frac{1}{3}$ length of head; occipital fontanelle very small, well in advance of occipital process; eye very small, its diameter 3-4 times in length of snout, 5-7 times in interorbital width, which equals width of mouth and $\frac{2}{5}$ length of head; band of premaxillary teeth 6 times as long as broad; band of vomerine teeth a little narrower than the premaxillary band, rather widely interrupted in the middle, composed of small, partly pointed, partly granular teeth; nasal barbel $\frac{1}{3}$ to nearly $\frac{1}{2}$ length of head; maxillary barbel as long as head, reaching middle of pectoral spine; outer mandibular barbel $\frac{3}{4}$ length of head, inner about $\frac{1}{2}$. Gill-rakers on first arch long and closely set, 55 in number. Clavicles hidden under the skin. Dorsal fin with 63-72 rays, its distance from occipital process $\frac{2}{7}$ to $\frac{1}{3}$ length of head, its distance from caudal 1-4 times diameter of eye. Anal fin with 50-52 rays, narrowly separated from caudal. Pectoral fin $\frac{1}{2}$ length of head, the spine feebly serrated on the outer border, $\frac{2}{3}$ - $\frac{1}{5}$ the length of the fin. Ventral fin once

and $\frac{1}{4}$ as distant from root of caudal as from end of snout. Caudal fin $\frac{1}{2}$ length of head. Dark olive-brown above, whitish beneath.

Total length 550 millim.

Natal.

In addition to a specimen from Pietermaritzburg, I have examined the type in the Paris Museum, a stuffed specimen stated to be from the Cape of Good Hope.

11. CLARIAS PLATYCEPHALUS.

Boulenger, Ann. Mus. Congo, Zool. ii. 1902, p. 35, pl. x. fig. 1.

Depth of body 6 to $6\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to 4 times. Head once and $\frac{1}{4}$ as long as broad, feebly granulate above; occipital process obtusely pointed; frontal fontanelle sole-shaped, $\frac{1}{5}$ to $\frac{1}{4}$ length of head; occipital fontanelle smaller, in advance of occipital process; eye very small, 4 times in length of snout, $7\frac{1}{2}$ to 8 times in interorbital width, which equals width of mouth and $\frac{1}{2}$ length of head; band of præmaxillary teeth 5 times as long as broad; vomerine teeth conical, forming a crescentic band which is as broad as the præmaxillary band; nasal barbel $\frac{3}{5}$ to $\frac{3}{4}$ length of head; maxillary barbel once and $\frac{1}{3}$ as long as head, extending beyond extremity of pectoral fin; outer mandibular barbel as long as head, inner $\frac{2}{3}$ to $\frac{3}{4}$. Gill-rakers few and wide apart, 12 on anterior arch. Clavicles hidden under the skin. Dorsal 65–70, its distance from occipital process $\frac{1}{4}$ length of head, its distance from caudal greater than diameter of eye. Anal 56–62, narrowly separated from caudal. Pectoral $\frac{1}{2}$ length of head, the spine smooth and $\frac{5}{7}$ the length of the fin. Ventral a little nearer end of snout than root of caudal. Caudal $\frac{1}{2}$ length of head. Dark brown above, brownish white beneath; anal with a light edge; caudal with dark bars.

Total length 340 millim.

Upper Congo; Kribi River, South Cameroon.

12. CLARIAS CARSONII.

Boulenger, Ann. & Mag. N. H. (7) xii. 1903, p. 362, and Fish. Nile, p. 294, pl. liii. fig. 1 (1907).

Depth of body $6\frac{1}{2}$ to $9\frac{1}{2}$ times in total length, length of head $4\frac{1}{6}$ to 5 times. Head $1\frac{1}{5}$ to $1\frac{1}{3}$ times as long as broad, smooth; occipital process angular, not longer than broad; frontal fontanelle sole-shaped or knife-shaped, $2\frac{1}{2}$ to 3 times as long as broad, 4 or 5 times in length of head; occipital fontanelle small, in advance of or encroaching a little on occipital process; eye 3 to 5 times in length of snout, 6 to $8\frac{2}{3}$ times in interorbital width; width of mouth a little less than interorbital width; band of præmaxillary teeth $3\frac{1}{2}$ to 5 times as long as broad; vomerine teeth conical, some very obtusely, forming a crescentic band which is about as broad as the præmaxillary band; nasal barbel $\frac{2}{5}$ to $\frac{3}{5}$ length of head; maxillary barbel $\frac{3}{5}$ to $\frac{3}{4}$ length of head, not reaching or reaching

gill-opening; outer mandibular barbel $1\frac{1}{3}$ to $1\frac{1}{2}$ times length of inner, which measures $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Gill-rakers few and wide apart, 10 or 11 on anterior arch. Clavicles hidden under the skin. Dorsal 65 to 78, its distance from occipital process $\frac{2}{5}$ to $\frac{3}{5}$ length of the head, its distance from caudal equal to one or two diameters of eye. Anal 57 to 64, nearly touching caudal. Pectoral about $\frac{1}{2}$ length of head, the spine very indistinctly serrated and measuring about $\frac{2}{3}$ the length of the fin. Ventral $1\frac{1}{3}$ to $1\frac{2}{3}$ times as distant from caudal as from end of snout. Caudal $\frac{1}{2}$ as long as head. Dark brown above, lighter brown beneath.

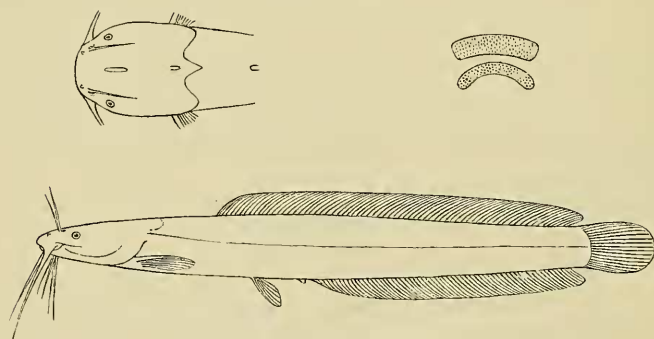
Total length 285 millim.

Lake Victoria to Lake Nyassa.

13. *CLARIAS POENSIS*, sp. n.

Depth of body $8\frac{1}{3}$ times in total length, length of head $4\frac{1}{3}$ times. Head once and $\frac{1}{3}$ as long as broad, smooth; occipital process acutely pointed, as long as broad; frontal and occipital fontanelles very small, the latter in advance of occipital process; eye very small, 3 times in length of snout, 7 times in interorbital width, which equals width of mouth and $\frac{1}{2}$ length of head; band of premaxillary teeth 4 times as long as broad; vomerine teeth

Text-fig. 252.



Clarias poensis.

conical, forming a curved band which is narrower than the premaxillary band; nasal barbel about $\frac{2}{5}$ length of head, maxillary $\frac{5}{6}$ length of head and reaching a little beyond base of pectoral; outer mandibular $\frac{2}{3}$, inner mandibular $\frac{2}{5}$ length of head. Gill-rakers few, 13 on anterior arch. Clavicles concealed under the skin. Dorsal 76, its distance from occipital process $\frac{2}{5}$ length of head, its distance from caudal fin a little greater than diameter of eye. Anal 60, narrowly separated from caudal. Pectoral $\frac{1}{2}$ length of head, the spine very feebly serrated on both sides and about $\frac{2}{3}$ the length of the fin. Ventral once and $\frac{1}{2}$ as

distant from base of caudal as from end of snout. Caudal $\frac{1}{2}$ length of head. Dark brown, lighter beneath.

Total length 285 millim.

Fernando Po. A single specimen, from Mr. E. Seimund's collection.

14. CLARIAS SUBMARGINATUS.

Peters, Sitzb. Ges. Naturf. Fr. Berl. 1882, p. 74.

Depth of body 6 to $6\frac{1}{2}$ times in total length, length of head 4 to 5 times. Head once and $\frac{1}{3}$ as long as broad, smooth; occipital process pointed; frontal fontanelle knife-shaped, $2\frac{1}{2}$ to 3 times as long as broad; occipital fontanelle smaller, slightly encroaching on the occipital process; eye very small, 3 times in length of snout, 7 times in interorbital width, which equals width of mouth and $\frac{1}{2}$ length of head; band of præmaxillary teeth $4\frac{1}{2}$ or 5 times as long as broad; vomerine teeth conical, forming a curved band which is as broad as the præmaxillary band; nasal barbel about $\frac{2}{3}$ or $\frac{3}{4}$ length of head, maxillary once and $\frac{1}{5}$ to once and $\frac{1}{4}$, outer mandibular once, inner mandibular $\frac{2}{5}$. Gill-rakers very few, 10 on anterior arch. Clavicles concealed under the skin. Dorsal 75-84, its distance from occipital process $\frac{2}{5}$ length of head, its distance from caudal equal to or a little greater than diameter of eye. Anal 60-70, also separated from the caudal. Pectoral $\frac{1}{2}$ length of head, the spine very feebly serrated on outer side and about $\frac{2}{3}$ the length of the fin. Ventral once and $\frac{1}{3}$ as distant from base of caudal as from end of snout. Caudal $\frac{1}{2}$ length of head. Dark brown, lighter beneath; a dark, light-edged curved band on the caudal.

Total length 210 millim.

Two specimens, from the Ja River, in S. Cameroon, were obtained by Mr. Bates.

The type specimens (young) preserved in the Berlin Museum, and on which I have notes furnished me by the late Prof. Hilgendorf, are from the 'Tooxlong River' in West Africa, a river which I have not been able to trace but which is probably somewhere in the Cameroon or Gaboon district.

15. CLARIAS LIOCEPHALUS.

Clarias liocephalus, Bouleng. Tr. Zool. Soc. xv. 1898, p. 24, pl. vii. fig. 2, and Poiss. Bass. Congo, p. 257 (1901).

Depth of body $5\frac{1}{2}$ to 7 times in total length, length of head $4\frac{1}{2}$ or 5 times. Head $1\frac{1}{4}$ - $1\frac{1}{3}$ times as long as broad, smooth; occipital process angular; fontanelles feebly distinct, occipital in advance of occipital process; eye small, 3 times in length of snout, 5 to 6 times in interorbital width; width of mouth equal to interorbital width, $\frac{1}{2}$ length of head; vomerine teeth conical, forming a crescentic band which is about as broad as the præmaxillary band; nasal barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head; maxillary barbel as long as head or a little longer, extending to middle or extremity

of pectoral; outer mandibular barbel about $1\frac{1}{4}$ length of inner, which measures $\frac{2}{3}$ to $\frac{2}{3}$ length of head. 13 to 15 gill-rakers on first arch. Clavicles not exposed. Dorsal 70-72, its distance from occipital process $\frac{3}{5}$ or $\frac{2}{3}$ length of head, its distance from caudal greater than diameter of eye. Anal 50-58, not reaching caudal. Pectoral about $\frac{1}{2}$ length of head, the spine feeble, not serrated, about $\frac{1}{2}$ the length of the fin. Ventrals much nearer end of snout than caudal. Caudal $\frac{1}{2}$ length of head. Uniform blackish brown.

Total length 140 millim.

Lake Tanganyika; Upper Ubanghi.

16. CLARIAS BREVICEPS.

Boulenger, Ann. Mus. Congo, Zool. i. 1900, p. 135, pl. xlviii.

fig. 6, and Poiss. Bass. Congo, p. 258, pl. xiii. fig. 1 (1901).

Depth of body 6 to 8 times in total length, length of head $4\frac{1}{2}$ to 5 times. Head $1\frac{1}{6}$ as long as broad, smooth; occipital process angular; fontanelles small, the frontal sole-shaped and nearly $\frac{1}{5}$ length of head, the occipital oval and partly on the occipital process; eye very small, its diameter 3 times in length of snout, 6 times in interorbital width; width of mouth equal to interorbital width, $\frac{1}{2}$ length of head; vomerine teeth conical, forming a crescentic band which is as broad as the præmaxillary band; nasal barbel $\frac{3}{5}$ length of head; maxillary barbel as long as or a little longer than head, extending to extremity of pectoral; outer mandibular barbel about $1\frac{1}{2}$ length of inner, which measures $\frac{3}{5}$ length of head. 20 gill-rakers on first arch. Clavicles not exposed. Dorsal 58-60, its distance from the occipital process $\frac{1}{2}$ length of head, its distance from the caudal fin greater than the diameter of the eye. Anal 40-42, not reaching caudal. Pectoral about $\frac{1}{2}$ length of head, the spine not serrated, about $\frac{2}{3}$ the length of the fin. Ventrals much nearer end of snout than caudal. Caudal $\frac{1}{2}$ length of head. Uniform blackish brown above, brownish white beneath.

Total length 190 millim.

Marshes of Siala-Ntoto, Mayombe.

17. CLARIAS WALKERI.

Clarias walkeri Günther, Ann. & Mag. N. H. (6) xvii. 1896, p. 274, pl. xiv. fig. B.

Depth of body 6 to 8 times in total length, length of head 4 to $4\frac{1}{2}$ times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ as long as broad, smooth above, or very finely granulate behind; occipital process angular; frontal fontanelle small, sole-shaped; occipital fontanelle smaller, in advance of or slightly encroaching upon occipital process; eye very small, its diameter 3 to 4 times in length of snout, 6 to 8 times in interorbital width, which nearly equals width of mouth and is contained twice in length of head; band of præmaxillary teeth 4 to 5 times as long as broad; vomerine teeth conical,

forming a crescentic band which, in the middle, is about as broad as the præmaxillary band; nasal barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head; maxillary barbel $1\frac{1}{2}$ to 2 times as long as head, reaching extremity of pectoral or base of ventral; inner mandibular barbel a little shorter than nasal, $\frac{1}{2}$ to $\frac{3}{5}$ length of outer. Gill-rakers on first arch widely set, 12 to 15 in number. Clavicles concealed under the skin. Dorsal 70-80, its distance from occipital process $\frac{1}{3}$ to $\frac{1}{2}$ length of head, separated from caudal by an interspace at least as great as diameter of eye. Anal 52-60, narrowly separated from caudal. Pectoral $\frac{1}{2}$ to $\frac{3}{5}$ length of head, the spine feebly serrated on both sides, $\frac{3}{5}$ the length of the fin. Ventrals $1\frac{1}{3}$ to $1\frac{2}{3}$ times as distant from base of caudal as from end of snout. Caudal about $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Dark brown above, whitish beneath; dorsal and anal with a lighter edge.

Total length 290 millim.

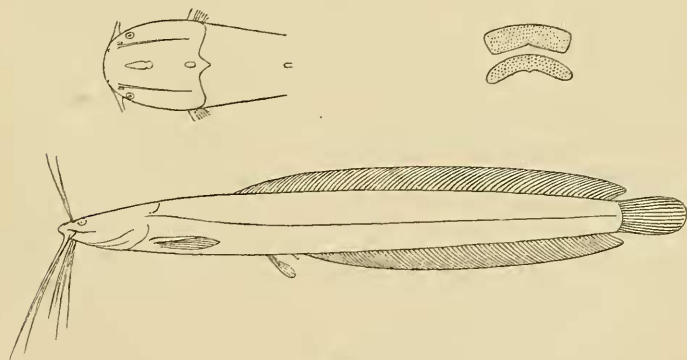
South Cameroon to Ogowé.

18. *CLARIAS LONGIOR*.

Boulenger, Ann. & Mag. N. H. (7) xx. 1907, p. 51.

Depth of body 8 to 9 times in total length, length of head 5 to $5\frac{1}{2}$ times. Head extremely depressed, once and $\frac{1}{4}$ as long as broad, smooth; occipital process very short, pointed; frontal fontanelle knife-shaped, about 3 times as long as broad; occipital fontanelle smaller, in advance of occipital process; eye very small, $2\frac{1}{2}$ times in length of snout, 5 or $5\frac{1}{2}$ times in interorbital width, which equals width of mouth and $\frac{1}{2}$ length of head; band of

Text-fig. 253.



Clarias longior.

præmaxillary teeth 4 times as long as broad; vomerine teeth granular, forming a curved band which is as broad as the præmaxillary band; nasal barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head, maxillary $1\frac{1}{4}$ to $\frac{1}{2}$ times, outer mandibular once, inner mandibular $\frac{3}{5}$ to $\frac{2}{3}$. Gill-rakers very few, 12 on anterior arch. Clavicles concealed

under the skin. Dorsal 80, its distance from occipital process $\frac{2}{5}$ to $\frac{2}{3}$ length of head, its distance from caudal equal to diameter of eye. Anal 70-73, nearly reaching caudal. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, the spine smooth and about $\frac{2}{3}$ the length of the fin. Ventral $1\frac{2}{3}$ to $1\frac{3}{4}$ times as distant from base of caudal and from end of snout. Caudal $\frac{2}{3}$ length of head. Dark brown above, whitish beneath.

Total length 225 millim.

Kribi River and Lobi River, South Cameroon.

19. CLARIAS ANGOLENSIS.

Steindachner, Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 766, pl. xiii. figs. 4 & 7; Boulenger, Poiss. Bass. Congo, p. 259 (1901).

Clarias gabonensis Günther, Ann. & Mag. N. H. (3) xx. 1867, p. 111, and (6) xvii. 1896, p. 274.

Clarias dolloi Boulenger, Ann. & Mag. N. H. (6) xvii. 1896, p. 311.

Depth of body 6 to 7 times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{2}$ times. Head $1\frac{1}{2}$ as long as broad, smooth or finely striated and finely granulate; occipital process angular or rounded, as long as broad or broader than long; frontal fontanelle oval or sole-shaped, twice as long as broad; occipital fontanelle smaller, extending on the occipital process in the young; eye small, its diameter 3 to 4 times in length of snout, $4\frac{1}{2}$ to 6 times in interorbital width, which, like the width of the mouth, is about $\frac{2}{5}$ length of head; band of præmaxillary teeth nearly 4 times as long as broad; vomerine teeth conical or subgranular, forming a crescentic band which, in the middle, is about as broad as the præmaxillary band and may bear a short posterior process; nasal barbel nearly as long as head; maxillary barbel $1\frac{1}{2}$ to $1\frac{2}{3}$ times length of head, reaching beyond pectoral, sometimes as far as ventral; inner mandibular barbel a little shorter than nasal, $\frac{2}{5}$ or $\frac{2}{3}$ length of outer. Gill-rakers on first arch fine, not very closely set, 25 to 30 in number. Clavicles exposed, striated or feebly granulated. Dorsal 70-82, its distance from occipital process $\frac{1}{4}$ or $\frac{1}{5}$ length of head, very narrowly separated from caudal. Anal 55-63, narrowly separated from caudal. Pectoral $\frac{1}{2}$ length of head, the spine serrated on both sides, $\frac{3}{4}$ to $\frac{4}{5}$ the length of the fin. Ventrals nearer end of snout than caudal. Caudal about $\frac{1}{2}$ length of head. Uniform dark brown or black, with more or less distinct light dots.

Total length 350 millim.

Cameroon, Gaboon, Congo, Angola.

20. CLARIAS BYTHIPOGON.

Clarias buthupogon Sauvage, Bull. Soc. Philom. (7) iii. 1878, p. 96; Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 275; Boulenger, Poiss. Bass. Congo, p. 261 (1901).

Clarias gabonensis (non Günth.) Sauvage, N. Arch. Mus. (2) iii. 1880, p. 39, pl. i. fig. 2.

Clarias camerunensis Lönnberg, Overs. Vet.-Ak. Förh. Stockh. 1895, p. 192.

Depth of body 6 to 7 times in total length, length of head 4 to $4\frac{1}{4}$ times. Head $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as broad, smooth above, or very finely granulate behind; occipital process angular; frontal fontanelle small, sole-shaped; occipital fontanelle smaller, partly on the occipital process; eye small, its diameter $2\frac{1}{2}$ times in length of snout, 4 or 5 times in interorbital width, which nearly equals width of mouth and is contained twice in length of head; band of premaxillary teeth 4 to 5 times as long as broad; vomerine teeth conical, forming a crescentic band which is as broad as or narrower than the premaxillary band; nasal barbel a little longer than head; maxillary barbel 2 to $2\frac{1}{2}$ times as long as head, reaching beyond base of ventral; inner mandibular barbel at least as long as head, about $\frac{2}{3}$ length of outer. 17-22 gill-rakers on first arch. Clavicles concealed under the skin. Dorsal 78-87, its distance from occipital process $\frac{2}{7}$ or $\frac{1}{3}$ length of head, almost in contact with caudal. Anal 55-67, almost in contact with caudal. Pectoral $\frac{1}{2}$ to $\frac{3}{4}$ length of head, the spine serrated on both sides, $\frac{2}{3}$ to $\frac{3}{4}$ the length of the fin. Ventrals much nearer end of snout than caudal. Caudal $\frac{1}{2}$ or nearly $\frac{2}{3}$ length of head. Olive-brown above, whitish beneath; anal fin with a dark edge.

Total length 230 millim.

Old Calabar to Congo.

21. CLARIAS ALLAUDI.

Boulenger, Ann. & Mag. N. H. (7) xvii. 1906, p. 437, and Fish. Nile, p. 296, pl. liii. fig. 2 (1907).

Clarias macrophthalmus (non Pfeffer) Pellegrin, Mém. Soc. Zool. France, xvii. 1905, p. 176.

Depth of body $5\frac{2}{3}$ to $6\frac{1}{2}$ times in total length, length of head 4 to $4\frac{1}{2}$ times. Head $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as broad, smooth above; occipital process acutely pointed, longer than broad; frontal fontanelle twice as long as broad, about 4 times in length of head; occipital fontanelle small, extending on occipital process; eye 2 or $2\frac{1}{2}$ times in length of snout, 4 or 5 times in interorbital width; width of mouth a little less than interorbital width; band of premaxillary teeth about 4 times as long as broad; vomerine teeth conical, forming a crescentic band which is longer and a little broader than the band of premaxillary teeth; nasal barbel as long as or a little longer than head; maxillary barbel $1\frac{1}{2}$ to $1\frac{2}{3}$ times length of head, reaching ventral or between pectoral and ventral; outer mandibular barbel $1\frac{1}{3}$ to $1\frac{1}{2}$ times as long as inner and about $1\frac{1}{3}$ length of head. Gill-rakers moderate, 14 or 15 on anterior arch. Clavicles hidden under the skin. Dorsal 65 to 78, its distance from occipital process about $\frac{1}{4}$ length of head, extending to root of caudal. Anal 55 to 62, extending to root of caudal. Pectoral $\frac{1}{2}$ length of head, the spine serrated on both sides and about $\frac{2}{3}$ the length of the fin. Ventral $1\frac{1}{2}$ times as distant from

root of caudal as from end of snout. Caudal about $\frac{1}{2}$ as long as head. Blackish brown above, lighter brown beneath.

Total length 230 millim.

Lake Victoria.

22. CLARIAS WERNERI.

Boulenger, Ann. & Mag. N. H. (7) xvii. 1906, p. 569;

Werner, Sitzb. Ak. Wien, cxv. i. 1906, p. 1135, pl. iv.;

Boulenger, Fish. Nile, p. 297, pl. liii. fig. 3 (1907).

Depth of body $6\frac{1}{2}$ to 8 times in total length, length of head $4\frac{1}{2}$ to 5 times. Head about once and $\frac{1}{2}$ as long as broad, smooth or very feebly granulate above; occipital process angular, not longer than broad; frontal fontanelle more or less distinctly sole-shaped, $1\frac{1}{2}$ to 2 times as long as broad, its length 4 to 5 times in that of the head; occipital fontanelle as large or a little smaller, oval or elliptic, partly on occipital process; eye 2 to 3 times in length of snout, 5 to 6 times in interorbital width; width of mouth a little less than interorbital width; band of præmaxillary teeth 3 to 4 times as long as broad; vomerine teeth granular, forming a crescentic band which is as broad as or a little narrower than the præmaxillary band; nasal barbel nearly once to once and $\frac{1}{2}$ length of head; maxillary barbel $1\frac{1}{5}$ to 2 times length of head, reaching extremity of pectoral or beyond; outer mandibular barbel about once and $\frac{1}{2}$ as long as inner and equal to or longer than head. Gill-rakers moderate, 16 to 18 on anterior arch. Clavicles hidden under the skin. Dorsal 82 to 91, its distance from occipital process nearly $\frac{1}{3}$ length of head, in contact with or very narrowly separated from caudal. Anal 68 to 72, in contact with or very narrowly separated from caudal. Pectoral nearly $\frac{1}{2}$ length of head, the spine very feebly serrated on the outer border and about $\frac{2}{3}$ the length of the fin. Ventral $1\frac{3}{5}$ to $1\frac{3}{4}$ times as distant from root of caudal as from end of snout. Caudal about $\frac{1}{2}$ as long as head. Blackish brown above, lighter beneath.

Total length 230 millim.

Uganda.

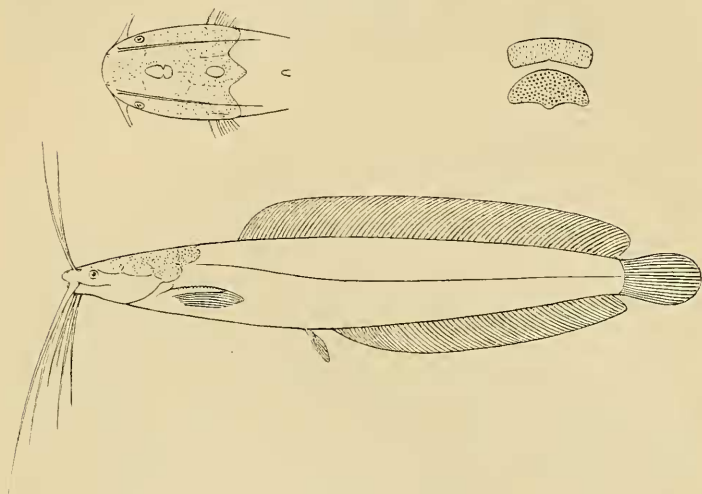
23. CLARIAS MACROMYSTAX.

Günther, Cat. Fish. v. p. 17 (1864).

Depth of body $6\frac{1}{3}$ times in total length, length of head 4 times. Head $1\frac{1}{2}$ as long as broad, finely granulate above; occipital process angular; frontal fontanelle oval, not quite twice as long as broad; occipital fontanelle smaller, in advance of occipital process; eye small, its diameter 3 times in length of snout, $5\frac{1}{3}$ times in interorbital width, which equals width of mouth and $\frac{2}{5}$ length of head; band of præmaxillary teeth only 3 times as long as broad; vomerine teeth mostly granular, forming a large fan-shaped patch the longitudinal diameter of which exceeds the width of the præmaxillary band; nasal barbel as long as head; maxillary barbel $1\frac{1}{2}$ length of head, reaching nearly to base of ventral; inner

mandibular barbel nearly as long as nasal, $\frac{2}{3}$ length of outer. Gill-rakers on first arch not closely set, 16 in number. Clavicles exposed, striated. Dorsal 80, its distance from occipital process $\frac{1}{4}$ length of head, very narrowly separated from caudal. Anal 63,

Text-fig. 254.

*Clarias macromystax.*

very narrowly separated from caudal. Pectoral $\frac{1}{2}$ length of head, the spine strongly serrated on both sides, $\frac{3}{4}$ the length of the fin. Ventrals much nearer end of snout than caudal. Caudal $\frac{1}{2}$ length of head. Dark brown.

Total length 205 millim.

Gambia.

24. CLARIAS DUMERILII.

Steindachner, Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 766, pl. xiii. fig. 8, & pl. xiv. fig. 5.

Depth of body 6 to $7\frac{1}{2}$ times in total length, length of head 4 to $4\frac{1}{2}$ times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad, smooth above; occipital process angular; frontal fontanelle sole-shaped, about twice as long as broad; occipital fontanelle smaller, usually extending on the occipital process; eye very small, its diameter 3 times in length of snout, 6 or 7 times in interorbital width, which, like the width of the mouth, measures $\frac{1}{2}$ length of head; band of premaxillary teeth 4 times as long as broad; vomerine teeth conical or subgranular, forming a crescentic band which, in the middle, is a little narrower than the premaxillary band; nasal barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head; maxillary barbel as long as or a little longer than head, reaching middle or end of pectoral fin;

inner mandibular barbel $\frac{1}{2}$ to $\frac{2}{3}$ length of head, about $\frac{2}{3}$ length of outer. Gill-rakers on first arch not closely set, 12 to 15 in number. Clavicles concealed under the skin. Dorsal 66-72, its distance from occipital process about $\frac{1}{2}$ length of head, narrowly separated from caudal. Anal 49-55. Pectoral $\frac{1}{2}$ to $\frac{3}{5}$ length of head, the spine serrated on both sides, about $\frac{1}{2}$ the length of the fin. Ventrals much nearer end of snout than caudal. Caudal about $\frac{3}{5}$ length of head. Uniform dark brown.

Total length 155 millim.

Angola.

25. CLARIAS LIBERIENSIS.

Steindachner, Notes Leyd. Mus. xvi. 1894, p. 54.

Clarias bulume Steindachner, t. c. p. 55.

Depth of body 5 to $6\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $4\frac{1}{2}$ times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad, smooth or very finely granulate above; occipital process angular; frontal fontanelle small, sole-shaped; occipital fontanelle smaller, just in advance of occipital process; eye very small, its diameter 3 times in length of snout, 7 or 8 times in interorbital width, which equals width of mouth and is contained twice in length of head; band of premaxillary teeth 4 times as long as broad; vomerine teeth conical or subgranular, forming a crescentic band which is as broad as the premaxillary band; nasal barbel $\frac{3}{4}$ to $\frac{4}{5}$ length of head; maxillary barbel a little longer (up to $1\frac{2}{5}$) than head, reaching nearly to end of pectoral fin or a little beyond; inner mandibular barbel as long as nasal, little shorter than outer. About 20 gill-rakers on the first arch. Clavicles concealed under the skin. Dorsal 60-68, its distance from occipital process $\frac{2}{5}$ length of head, almost in contact with caudal. Anal 44-55, almost in contact with caudal. Pectoral nearly $\frac{1}{2}$ length of head, the spine feebly serrated on both sides, $\frac{2}{3}$ or $\frac{3}{4}$ the length of the fin. Ventrals much nearer end of snout than caudal. Caudal nearly $\frac{2}{3}$ length of head. Olive-brown.

Total length 220 millim.

Sierra Leone and Liberia, S. Cameroon, Benito R.

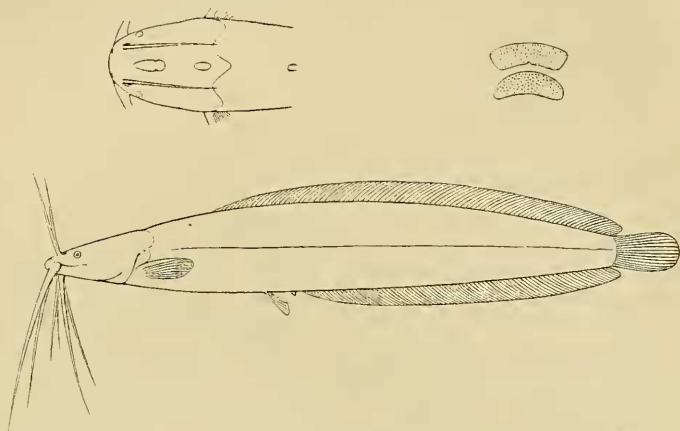
26. CLARIAS PACHYNEMA.

Boulenger, Ann. & Mag. N. H. (7) xii. 1903, p. 438.

Depth of body $6\frac{1}{2}$ to 7 times in total length, length of head $4\frac{2}{3}$ to 5 times. Head $1\frac{1}{5}$ to $1\frac{1}{2}$ times as long as broad, smooth; occipital process acutely pointed; frontal fontanelle sole-shaped, about twice as long as broad; occipital fontanelle smaller, in advance of occipital process; eye very small, 3 to 4 times in length of snout, 6 times in interorbital width, which equals about $\frac{2}{3}$ length of head and exceeds width of mouth; band of premaxillary teeth $2\frac{1}{2}$ to 3 times as long as broad; vomerine teeth conical, forming a short curved band, which in the middle is as broad as the premaxillary band; barbels thick and papillose at the base;

nasal barbel $\frac{3}{4}$ to $\frac{1}{2}$ length of head, maxillary $1\frac{1}{3}$ to $1\frac{1}{2}$ times, outer mandibular $1\frac{1}{4}$ to $1\frac{1}{3}$ times, inner mandibular $\frac{3}{4}$ to $\frac{1}{2}$. Gill-rakers few, about 15 on anterior arch. Clavicles concealed under the skin. Dorsal 92-95, its distance from occipital process $\frac{2}{3}$ to $\frac{1}{2}$ length of head. Anal 78-80. Dorsal and anal extending to

Text-fig. 255.

*Clarias pachynema.*

root of caudal. Pectoral $\frac{1}{2}$ length of head, its spine feebly serrated on both sides and $\frac{2}{3}$ to $\frac{3}{4}$ the length of the fin. Ventral about once and $\frac{2}{3}$ as distant from caudal as from end of snout. Caudal $\frac{1}{2}$ length of head. Dark olive-brown above, yellowish beneath.

Total length 255 millim.

Ja River, S. Cameroon.

27. CLARIAS LEVICEPS.

Gill, Proc. Ac. Philad. 1862, p. 139; Sauvage, Bull. Soc. Zool. France, 1882, p. 318, pl. v. fig. 2; Boulenger, Proc. Zool. Soc. 1904, i. p. 200.

Clarias kingsleyae Günther, Proc. Zool. Soc. 1902, ii. p. 334.

Depth of body $8\frac{1}{2}$ to 12 times in total length, length of head 5 to $5\frac{1}{2}$ times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad, smooth; occipital process pointed; frontal fontanelle sole-shaped, about twice as long as broad; occipital fontanelle smaller, in advance of occipital process; eye very small, 3 to 4 times in length of snout, 6 to 7 times in interorbital width, which equals $\frac{1}{2}$ length of head and a little exceeds width of mouth; band of premaxillary teeth 4 to 5 times as long as broad; vomerine teeth conical, forming a curved band which is as broad as or a little narrower than the premaxillary band; barbels moderately thick,

nasal $\frac{1}{2}$ to $\frac{2}{3}$ length of head, maxillary $1\frac{1}{4}$ to $\frac{3}{5}$ times, outer mandibular once, inner mandibular $\frac{2}{3}$. Gill-rakers few, 15 to 20 on first arch. Clavicles concealed under the skin. Dorsal fin 79-87, its distance from occipital process $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Anal fin 68-78. Dorsal and anal fins extending almost to the very root of the caudal. Pectoral fin $\frac{3}{5}$ to $\frac{2}{3}$ length of head, the spine feebly serrated on the outer side and $\frac{2}{3}$ to $\frac{3}{4}$ the length of the fin. Ventral fin $1\frac{1}{2}$ to $1\frac{2}{3}$ times as far from caudal as from end of snout. Caudal fin $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Uniform dark brown above, light brown beneath, in spirit.

Total length 270 millim.

Gold Coast, Cameroon.

Type (U.S. Nat. Mus.) examined.

28. CLARIAS BUETTIKOFERI.

Steindachner, Notes Leyd. Mus. xvi. 1894, p. 53.

Depth of body 6 times in total length, length of head 4 times. Head nearly $1\frac{1}{3}$ as long as broad, nearly smooth above; occipital process pointed; eye very small, about 6 times in interorbital width, which is a little more than $\frac{1}{2}$ length of head; width of mouth $\frac{1}{2}$ length of head; vomerine teeth obtusely conical, forming a crescentic band which, in the middle, is as broad as the præmaxillary band; nasal barbel reaching middle of pectoral; maxillary barbel extending a little beyond end of pectoral. Dorsal 55, anal 50, the last ray completely adnate to the caudal. Pectoral a little more than $\frac{1}{2}$ length of head; spine short, serrated on the inner edge only. Dark reddish brown.

Total length 155 millim.

Liberia.

Only known to me from the description quoted above. The type specimen, I am informed by Mlle. Dr. Popta, is not to be found in the Leyden Museum, which is supposed to contain the types of the fishes discovered by Dr. Büttikofer.

29. CLARIAS AMPLEXICAUDA.

Boulenger, Ann. Mus. Congo, Zool. ii. 1902, p. 36, pl. x. fig. 2.

Depth of body 7 times in total length, length of head 5 times. Head once and $\frac{1}{4}$ as long as broad, smooth; occipital process very short and forming a very open angle; frontal fontanelle sole-shaped, $\frac{1}{5}$ length of head; occipital fontanelle smaller, in advance of occipital process; eye $\frac{1}{2}$ length of snout, $\frac{1}{4}$ interorbital width, which is a little less than $\frac{1}{2}$ length of head and equals width of mouth; band of præmaxillary teeth 4 times as long as broad; vomerine teeth conical, forming a crescentic band which is as broad as the præmaxillary band; nasal barbel $\frac{1}{5}$ length of head*.

* The other barbels are mutilated in the single known specimen.

Gill-rakers rather long, 15 on anterior arch. Clavicles feebly striated and covered with a thin skin. Dorsal 80, its distance from occipital process $\frac{2}{3}$ length of head. Anal 65. Both dorsal and anal embracing root of caudal. Pectoral $\frac{2}{3}$ length of head, its spine serrated on both sides and measuring $\frac{2}{3}$ the length of the fin. Ventral once and $\frac{1}{2}$ as distant from caudal as from end of snout. Caudal a little more than $\frac{1}{2}$ length of head. Blackish brown above, a little lighter beneath.

Total length 155 millim.

Upper Ubanghi.

30. CLARIAS THEODORÆ.

M. Weber, Zool. Jahrb., Syst. x. 1897, p. 150.

Depth of body 6 times in total length, length of head $4\frac{1}{2}$ to $5\frac{1}{4}$ times. Head once and $\frac{2}{5}$ as long as broad, smooth; occipital process angular, broader than long; frontal fontanelle sole-shaped, twice as long as broad and about $\frac{1}{4}$ length of head; occipital fontanelle smaller, in advance of occipital process; eye very small, 3 times in length of snout, 6 times in interorbital width, which equals width of mouth and a little less than $\frac{1}{2}$ length of head; band of premaxillary teeth 4 times as long as broad; vomerine teeth conical, forming a curved band which is as broad as the premaxillary band; nasal barbel $\frac{1}{3}$ length of head; maxillary barbel as long as or a little longer than head, as long as outer mandibular. 14 gill-rakers on anterior arch. Clavicles feebly striated, distinct under the skin. Dorsal 80-90, its distance from occipital process $\frac{1}{3}$ length of head. Anal 67-73. Dorsal and anal embracing base of caudal. Pectoral about $\frac{1}{2}$ length of head, its spine feebly serrated on the outer side, strongly on the inner and measuring $\frac{1}{2}$ to $\frac{2}{3}$ the length of the fin. Ventral once and $\frac{1}{2}$ as distant from caudal as from end of snout. Caudal about $\frac{1}{2}$ length of head. Greenish grey to blackish.

Total length 180 millim.

Natal.

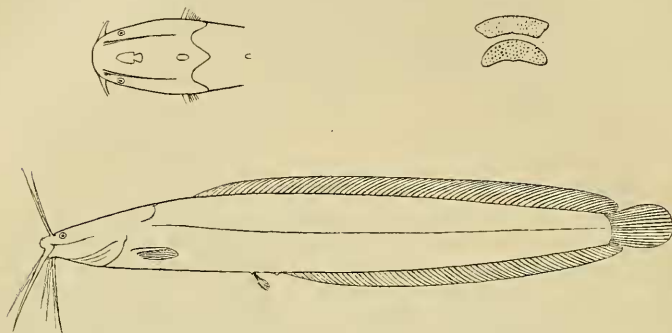
31. CLARIAS FOULONI.

Boulenger, Ann. & Mag. N. H. (7) xvi. 1905, p. 644.

Depth of body $6\frac{1}{2}$ times in total length, length of head 5 times. Head once and $\frac{1}{2}$ as long as broad, smooth; occipital process angular; frontal fontanelle sole-shaped, $\frac{1}{4}$ length of head, twice as long as occipital fontanelle, which is in advance of occipital process; eye 3 times in length of snout, 5 times in interorbital width, which is about $\frac{1}{3}$ length of head and equals width of mouth; band of premaxillary teeth 4 times as long as broad; vomerine teeth conical, forming a crescentic band which, in the middle, is a little broader than the premaxillary band; nasal barbel $\frac{2}{3}$, maxillary barbel $\frac{1}{3}$, outer mandibular $\frac{3}{4}$ length of head. Gill-rakers about 20 on anterior arch. Clavicles

concealed under the skin. Dorsal 83, its distance from occipital process $\frac{1}{3}$ length of head. Anal 68. Both dorsal and anal embracing root of caudal. Pectoral $\frac{2}{5}$ length of head, its spine

Text-fig. 256.

*Clarias fouloni.*

serrated on inner side only and measuring $\frac{3}{4}$ the length of the fin. Ventral once and $\frac{3}{4}$ as distant from caudal as from end of snout. Caudal nearly $\frac{1}{2}$ length of head. Blackish brown, belly paler brown.

Total length 200 millim.

Lake Bangwelu.

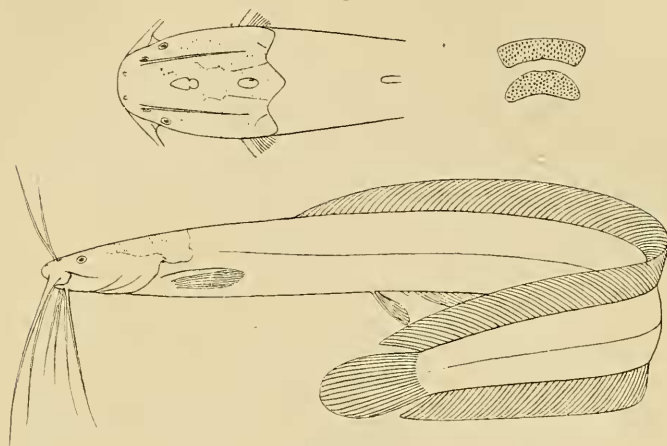
32. CLARIAS SALE.

Hubrecht, Notes Leyd. Mus. iii. 1881, p. 68; Steindachner, op. cit. xvi. 1894, p. 52.

Depth of body 9 to 12 times in total length, length of head 5 to 6 times. Head about $1\frac{1}{2}$ as long as broad, finely granulate above; occipital process short, rounded or very obtusely pointed; frontal fontanelle oval or sole-shaped, about twice as long as broad; occipital fontanelle smaller, in advance of occipital process; eye small, its diameter $2\frac{1}{2}$ to 3 times in length of snout, 4 to $5\frac{1}{2}$ times in interorbital width, which equals width of mouth and $\frac{2}{5}$ length of head; band of premaxillary teeth 4 times as long as broad; vomerine teeth conical, forming a crescentic band which is nearly as broad as the premaxillary band; nasal barbel $\frac{2}{3}$ length of head; maxillary barbel a little longer than head, reaching end of pectoral; inner mandibular barbel $\frac{2}{5}$ length of head, nearly $\frac{2}{3}$ length of outer. Gill-rakers few, 8 to 10 on first arch. Clavicles distinct under the thin skin, striated. Dorsal 89-93, its distance from occipital process $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal 70-78. Dorsal and anal connected with base of caudal by a narrow membrane. Pectoral $\frac{1}{2}$ length of head, the

spine strongly serrated on both sides, $\frac{3}{4}$ the length of the fin. Ventrals nearly twice as far from the caudal as from end of

Text-fig. 257.

*Clarias salei.*

snout. Caudal $\frac{3}{5}$ length of head. Blackish-brown or dark green above, with or without small yellowish spots.

Total length 360 millim. Reaches to 435 millim.

Liberia.

2. ALLABENCHELYS.

Boulenger, Proc. Zool. Soc. 1902, i. p. 234.

Two species:—

Depth of body $7-8\frac{1}{2}$ times, head $5-5\frac{1}{2}$ times in total length; ventral $1\frac{1}{2}-1\frac{3}{4}$ as distant from root of caudal as from end of snout; D. 65-75, A. 60-65 1. *A. brevior* Blgr.

Depth of body 9-12 times, head $5\frac{1}{2}$ to 6 times in total length; ventral $1\frac{3}{4}$ to 2 as distant from root of caudal as from end of snout; D. 80-90, A. 60-75 2. *A. longicauda* Blgr.

1. ALLABENCHELYS BREVIOR.

Boulenger, Ann. & Mag. N. H. (7) xii. 1903, p. 439.

Depth of body 7 to $8\frac{1}{2}$ times in total length, length of head 5 to $5\frac{1}{2}$ times. Head $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as broad, smooth above, the bony casque, in the middle of the head, about $\frac{1}{2}$ width of head; postorbital bone narrow; supraoccipital process acutely pointed; a small frontal fontanelle; occipital fontanelle a little smaller, partly on occipital process; eye very small, $2\frac{1}{2}$ to 3 times in length of snout, 5 to 6 times in interorbital width which is $\frac{2}{5}$ length of head; band of præmaxillary teeth 3 to 4

times as long as broad; vomerine teeth conical or subgranular, forming a crescentic band which is as broad as or a little broader than the premaxillary band; nasal barbel $\frac{3}{5}$ to $\frac{2}{3}$ length of head; maxillary barbel as long as or a little shorter than head, not reaching beyond middle of pectoral fin; outer mandibular barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head, inner $\frac{1}{2}$ to $\frac{2}{5}$. Gill-rakers moderately long, 10 to 12 on anterior arch. Clavicles hidden under the skin. Dorsal 65-75, its distance from occipital process $\frac{2}{3}$ to $\frac{3}{4}$ length of head. Anal 60-65. Both dorsal and anal narrowly separated from caudal. Pectoral about $\frac{1}{2}$ length of head, its spine feebly serrated on both sides and $\frac{1}{2}$ to $\frac{2}{3}$ the length of the fin. Ventral once and $\frac{1}{2}$ to once and $\frac{2}{3}$ as distant from root of caudal as from end of snout. Caudal $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Olive-brown above, yellowish beneath; anal with a light edge.

Total length 205 millim.

Ja and Nyong Rivers, S. Cameroon.

2. ALLABENCHELYS LONGICAUDA.

Boulenger, Proc. Zool. Soc. 1902, i. p. 234, pl. xxii. fig. 1.

Depth of body 9 to 12 times in total length, length of head $5\frac{1}{2}$ to 6 times. Head $1\frac{1}{4}$ to $1\frac{1}{3}$ times as long as broad, smooth above, the bony casque, in the middle of the head, $\frac{1}{3}$ width of head; postorbital bone narrow; supraoccipital process acutely pointed; a small frontal fontanelle; occipital fontanelle very indistinct; eye very small, 3 to 4 times in length of snout, 6 times in interorbital width, which is not quite $\frac{1}{2}$ length of head; band of premaxillary teeth 4 to 5 times as long as broad; vomerine teeth conical or subgranular, forming a crescentic band which is as broad as or a little broader than the premaxillary band; nasal barbel $\frac{1}{2}$ to $\frac{2}{3}$ length of head; maxillary barbel as long as or a little longer than head, reaching middle or extremity of pectoral fin; outer mandibular barbel $\frac{2}{3}$ to once length of head, inner mandibular $\frac{1}{2}$ to $\frac{2}{5}$. Gill-rakers moderately long, 10 to 12 on anterior arch. Clavicles hidden under the skin. Dorsal 80-90, its distance from the occipital process $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Anal 60-75. Both dorsal and anal very narrowly separated from caudal. Pectoral $\frac{1}{2}$ to $\frac{3}{5}$ length of head, spine smooth or slightly serrated. Ventral $1\frac{3}{4}$ to 2 times distant from root of caudal as from end of snout. Caudal about $\frac{2}{3}$ length of head. Dark olive-brown above, whitish beneath, anal with a light edge; an ill-defined dark, light-edged crescentic band on the caudal.

Total length 280 millim.

Ja and Kribi Rivers, S. Cameroon.

3. CLARIALLABES.

Boulenger, Ann. Mus. Congo, Zool. i. 1900, p. 136, and Poiss. Bass. Congo, p. 262 (1901).

A single species.

1. CLARIALLABES MELAS.

Clarias melas Boulenger, Ann. & Mag. N. H. (5) xix. 1887, p. 148.

Clariallabes melas Boulenger, Il. cc., and Proc. Zool. Soc. 1902, i. pl. xxii. fig. 2.

Depth of body 10 to 11 times in total length, length of head 6 times. Head once and $\frac{1}{2}$ as long as broad, smooth, the bony casque, in the middle, about $\frac{1}{2}$ width of head; supraoccipital process acutely pointed; frontal fontanelle sole-shaped, twice and $\frac{1}{2}$ as long as broad; occipital fontanelle smaller, oval, partly on occipital process; eye very small, its diameter 4 times in length of snout, 7 times in interorbital width, which is $\frac{1}{3}$ length of head and a little less than width of mouth; band of præmaxillary teeth hardly 4 times as long as broad; vomerine teeth pointed, forming a crescentic band which is a little narrower than the præmaxillary band; nasal barbel $\frac{2}{5}$ to $\frac{2}{3}$ length of head; maxillary barbel nearly as long as head; inner mandibular barbel $\frac{2}{3}$ to $\frac{4}{5}$ length of head, outer nearly as long as head. Gill-rakers moderately long, 12 to 15 on anterior arch. Clavicles scarcely distinguishable under the skin. Dorsal 105-115, its distance from occipital process $\frac{1}{2}$ length of head. Anal 88-90. Both dorsal and anal united with caudal, which measures $\frac{1}{2}$ length of head. Pectoral nearly $\frac{1}{2}$ length of head, its spine serrated on both edges and about $\frac{2}{3}$ the length of the fin. Ventral $1\frac{2}{3}$ to 2 times distant from root of caudal as from end of snout. Uniform blackish brown.

Total length 260 millim.

Lower Congo.

4. GYMNALLABES.

Günther, Ann. & Mag. N. H. (3) xx. 1867, p. 111.

A single species.

1. GYMNALLABES TYPUS.

Günther, l. c. pl. ii. fig. A.

Depth of body 14 to 15 times in total length, length of head $7\frac{1}{2}$ to $8\frac{1}{2}$ times. Head about once and $\frac{1}{2}$ as long as broad, the width of the bony part, in the middle, $\frac{1}{4}$ to $\frac{1}{5}$ width of head; supraoccipital process acutely pointed; eye very small; interorbital width less than width of mouth, about $\frac{1}{3}$ length of head; band of præmaxillary teeth 3 to $3\frac{1}{2}$ times as long as broad; vomerine teeth pointed, forming a crescentic band which is narrower than the præmaxillary band; a much developed lobe at the angle of the mouth; nasal barbel $\frac{2}{3}$ to $\frac{5}{6}$ length of head; maxillary barbel a little longer than head; inner mandibular barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head, outer a little shorter than head. Gill-rakers moderately long, 10 on anterior arch. Clavicles hidden under the skin. Dorsal 98-110, its distance from occipital process $\frac{2}{5}$ to $\frac{3}{4}$ length of head. Anal 82-88. Dorsal and anal completely united with caudal, which is $\frac{2}{3}$ to $\frac{5}{6}$ length of head.

Pectoral $\frac{1}{3}$ to $\frac{2}{5}$ length of head, with a very short smooth spine. Ventral 2 to $2\frac{1}{2}$ times as distant from root of caudal as from end of snout. Uniform blackish brown, lighter brown on the belly.

Total length 230 millim.

Lower Niger and Old Calabar.

5. CHANNALLABES.

Günther, Ann. & Mag. N. H. (4) xii. 1873, p. 143; Boulenger, Poiss. Bass. Congo, p. 263 (1901).

A single species.

1. CHANNALLABES APUS.

Gymnallabes apus Günther, t. c. p. 142.

Channallabes apus Boulenger, op. c. p. 264.

Body extremely elongate and serpentiform; length of head 10 to 14 times in total length. Head $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as broad; supraoccipital process acutely pointed; a sole-shaped frontal fontanelle; an oval occipital fontanelle, partly on the occipital process; eye extremely small, nearly hidden under the skin in the adult; band of premaxillary teeth 3 times as long as broad; vomerine teeth pointed, forming a crescentic band which is a little narrower; nasal barbel $\frac{2}{3}$ to $\frac{3}{4}$ length of head; maxillary barbel as long as head or slightly shorter; inner mandibular barbel a little shorter than the nasal, outer mandibular a little shorter than the maxillary. Gill-rakers moderately long, 9 to 10 on anterior arch. Dorsal 140–150, separated from occipital process by a space equal to or greater than length of head. Anal 125–130. Dorsal and anal completely united with caudal. Pectoral absent or reduced to a minute rudiment without spine. No trace of ventral. Vent at the anterior fourth of the total length. Uniform dark brown or black.

Total length 310 millim.

Congo and Angola.

6. HETEROBRANCHUS.

Geoffroy, Descr. Egypte, Poiss. (1809), part; Günther, Cat. Fish, v. p. 21 (1864); Boulenger, Poiss. Bass. Congo, p. 265 (1901), and Fish. Nile, p. 300 (1907).

Three species from Africa, and one from the Malay Archipelago.

Synopsis of the Species.

- | | |
|--|------------------------------------|
| D. 38–45: adipose fin $\frac{3}{4}$ – $\frac{2}{3}$ length of rayed dorsal; pectoral not more than $\frac{1}{2}$ length of head; 20–30 gill-rakers on anterior arch..... | 1. <i>H. bidorsalis</i> I. Geoffr. |
| D. 29–34; adipose fin as long as or a little shorter than rayed dorsal; pectoral not more than $\frac{1}{2}$ length of head; 20–30 gill-rakers on anterior arch | 2. <i>H. longifilis</i> C. & V. |
| D. 30–32; adipose fin as long as or a little shorter than rayed dorsal; pectoral $\frac{3}{4}$ length of head; 18–20 gill-rakers on anterior arch | 3. <i>H. isopterus</i> Blkr. |

1 *HETEROBRANCHUS BIDORSALIS*.

I. Geoffroy, Descr. Egypte, Poiss. p. 305, pl. xvi. figs. 2 & 5, & pl. xvii. figs. 8 & 9 (1827); Günther, Petherick's Trav. ii. p. 220 (1869); Bouleng. Fish. Nile, p. 300, pl. liv. fig. 1 (1907).

Heterobranchus geoffroyi Cuvier & Valenciennes, Hist. Poiss. xv. p. 392 (1840).

Heterobranchus senegalensis Cuvier & Valenciennes, t. c. p. 397; Steindachner, Sitzb. Ak. Wien, lx. 1869, p. 980.

Heterobranchus intermedius Günther, Cat. Fish. v. p. 22 (1864); and l. c.

Depth of body 6 to 9 times in total length, length of head $2\frac{1}{5}$ to $3\frac{1}{4}$ times. Head very strongly depressed, $1\frac{1}{4}$ to $1\frac{1}{2}$ times as long as broad, its upper surface coarsely granulate in the adult; occipital process pointed, sometimes very obtusely; frontal fontanelle knife-shaped, 3 to 4 times as long as broad, 3 to 5 times in length of head; occipital fontanelle small, in advance of occipital process; eye 3 (young) to $6\frac{1}{2}$ times in length of snout, 6 to $10\frac{1}{2}$ times in interorbital width; width of mouth a little less than interorbital width; band of premaxillary teeth about 5 times as long as broad; vomerine teeth also villiform, forming a crescentic band which is $1\frac{1}{4}$ to $1\frac{1}{2}$ times as broad as the premaxillary band and may have a small central posterior process; nasal barbel $\frac{2}{5}$ to once length of head; maxillary barbel $\frac{4}{5}$ to once and $\frac{6}{7}$ length of head, extending to extremity of pectoral or between this point and root of ventral; outer mandibular barbel $1\frac{1}{10}$ to $1\frac{1}{2}$ times as long as inner, which measures 1 to $1\frac{1}{2}$ times length of head. Gill-rakers rather short, 20 to 30 on anterior arch. Dorsal 38 to 45, its distance from occipital process $\frac{1}{10}$ to $\frac{1}{6}$ length of head; adipose dorsal $\frac{2}{5}$ to $\frac{2}{3}$ as long as, as deep as or lower than, and commencing immediately behind, rayed dorsal, extending to base of caudal. Anal 50 to 57, extending to base of caudal. Pectoral fin $\frac{2}{5}$ to $\frac{1}{2}$ length of head, the spine smooth and measuring $\frac{2}{5}$ to $\frac{3}{4}$ the length of the fin. Ventral midway between end of snout and base of caudal, or a little nearer the latter. Caudal $\frac{2}{5}$ to $\frac{1}{2}$ length of head. Dark olive above, whitish beneath; a dull orange or red edge to the dorsal, adipose, and caudal fins.

Total length 770 millim.; grows to 1220.

Nile, Chad Basin, Senegal, Niger.

2. *HETEROBRANCHUS LONGIFILIS*.

Cuvier & Valenciennes, Hist. Poiss. xv. p. 394, pl. ccccxlvii. (1840); Günther, Cat. Fish. v. p. 22 (1864), and Petherick's Trav. ii. p. 221 (1869); Boulenger, Fish. Nile, p. 303, pl. liv. fig. 2 (1907).

Heterobranchus laticeps Peters, Mon. Berl. Ac. 1852, p. 682, and Reise Mossamb. iv. p. 37, pl. vii. fig. 1 (1868); Boulenger, Poiss. Bass. Congo. p. 265 (1901).

Depth of body 6 to 8 times in total length, length of head 3 to $3\frac{2}{3}$ times. Head less strongly depressed than in the preceding

species, $1\frac{1}{2}$ to $1\frac{2}{3}$ times as long as broad, its upper surface coarsely granulate in the adult; occipital process acutely pointed; frontal fontanelle knife-shaped, $2\frac{1}{2}$ to 4 times as long as broad, $3\frac{1}{2}$ to $6\frac{1}{2}$ times in length of head; occipital fontanelle small, in advance of occipital process; eye $2\frac{1}{2}$ (very young) to $4\frac{1}{2}$ times in length of snout, 4 to 9 times in interorbital width; width of mouth a little less than interorbital width; band of præmaxillary teeth 5 to 6 times as long as broad; vomerine teeth also villiform, forming a crescentic band which is nearly as broad as or a little broader than præmaxillary band; nasal barbel $\frac{1}{2}$ to once length of head; maxillary barbel $1\frac{1}{5}$ to 2 times length of head, extending to end of the pectoral or between this point and origin of anal; outer mandibular barbel $1\frac{1}{2}$ to $1\frac{3}{4}$ times as long as inner, which measures $\frac{1}{2}$ to nearly once length of head. Gill-rakers rather short, 20 to 30 on anterior arch. Dorsal 29 to 34, its distance from occipital process $\frac{1}{4}$ to $\frac{1}{3}$ length of head; adipose dorsal as long as or a little shorter and lower than rayed dorsal, commencing immediately behind or at a short distance from the latter. Anal 44 to 54, extending, like the adipose dorsal, to the base of the caudal fin. Pectoral $\frac{2}{5}$ to $\frac{1}{2}$ the length of the head, the spine feebly serrated on the outer border and measuring $\frac{1}{2}$ (young) to $\frac{2}{7}$ the length of the fin. Ventral midway between end of snout and base of caudal, or a little nearer the latter. Caudal $\frac{1}{2}$ to $\frac{2}{3}$ length of head. Olive above, white beneath, sometimes with scattered black blotches; dorsal and anal fins pale olive, darker towards the edge, which may be margined with red; caudal fin yellowish or pale orange at the base, with a more or less distinct blackish crescentic band, sharply defined in front, shading off to yellow or red behind; adipose dorsal fin often blackish at the end.

Total length 720 millim.

Nile, Omo, Niger, Congo, Zambesi.

3. *Heterobranchus isopterus*.

Heterobranchus isopterus Bleeker, Nat. Verh. Wetensch. Haarlem, xviii. 1863, no. 2, p. 108, pl. xxii. fig. 1; Günther, Cat. v. p. 23 (1864).

Heterobranchus macronema, Bleeker, l. c. p. 109, pl. xxi. fig. 1.

Depth of body 6 to $6\frac{1}{2}$ times in total length, length of head $3\frac{1}{2}$ to $3\frac{1}{2}$ times. Head $1\frac{2}{5}$ as long as broad, its upper surface finely granulate; occipital process acutely pointed; frontal fontanelle 3 to 4 times as long as broad, 3 to $4\frac{1}{2}$ times in length of head; occipital fontanelle small, in advance of occipital process; eye small, $2\frac{1}{2}$ or 3 times in length of snout, $5\frac{1}{2}$ or 6 times in interorbital width, which is a little less than $\frac{1}{2}$ length of head; width of mouth $\frac{2}{3}$ length of head; band of præmaxillary teeth 5 times as long as broad; vomerine teeth villiform, forming a crescentic band which is as broad as or a little narrower than the præmaxillary band; nasal barbel a little shorter than the head; maxillary barbel $1\frac{1}{3}$ to $1\frac{1}{2}$ times length of head, extending to extremity of

pectoral spine or to base of ventral; inner mandibular barbel $\frac{3}{4}$ length of outer, a little shorter than the nasal. 18-20 gill-rakers on first arch. Dorsal 30-32, its distance from occipital process $\frac{1}{3}$ or $\frac{1}{4}$ length of head; adipose dorsal as long as or a little shorter, lower than, and commencing a short distance behind, dorsal proper, narrowly separated from caudal. Anal 41-46. Pectoral $\frac{3}{5}$ length of head, the spine feebly serrated on the outer edge and measuring $\frac{3}{4}$ the length of the fin. Ventrals midway between end of snout and base of caudal. Caudal a little more than $\frac{1}{2}$ length of head. Blackish brown above, whitish beneath; fins with a narrow yellowish margin.

Total length 170 millim.

Gold Coast.

7. DINOPTERUS.

Boulenger, Tr. Zool. Soc. xvii. 1906, p. 550.

A single species.

1. DINOPTERUS CUNNINGTONI.

Boulenger, l. c. pl. xxxi.

Depth of body $7\frac{1}{2}$ times in total length, length of head $3\frac{2}{5}$ times. Head extremely flattened, once and $\frac{1}{3}$ as long as broad, its upper surface covered with very thin skin and rugose with striæ radiating from the occipital region; frontal fontanelle large, $2\frac{1}{2}$ times as long as broad, $\frac{1}{4}$ length of head; occipital fontanelle very small; a rather long and narrow occipital process; snout broad, truncate, not projecting beyond mouth; eye small, 3 times in length of snout, $7\frac{1}{2}$ times in interorbital width; nasal barbel $\frac{3}{5}$ length of head; maxillary barbel a little longer than head, reaching posterior third of pectoral; outer mandibular barbels once and $\frac{1}{2}$ as long as inner and nearly as long as head. Jaws with bands of minute villiform teeth; similar teeth form a rather broader crescentic band on the vomer. Gill-rakers very long and slender, closely set, about 110 on anterior arch. Dorsal 53, its distance from occipital process $\frac{1}{3}$ length of head; adipose dorsal low and short, in contact with caudal. Anal 43, separated from caudal by a space equal to twice diameter of eye. Pectoral $\frac{1}{2}$ length of head; spine rather weak, not serrated, a little more than half length of fin. Ventral equally distant from end of snout and from root of caudal. Caudal rounded. Dark brown, almost black above, pinkish white beneath.

Described from a single specimen, 500 millim. long, the species said to grow to 1290 millim. In a young specimen, 90 millim. long, the head is less depressed and the eyes are proportionally larger than in the adult; ventrals a little nearer end of snout than root of caudal.

Lake Tanganyika.